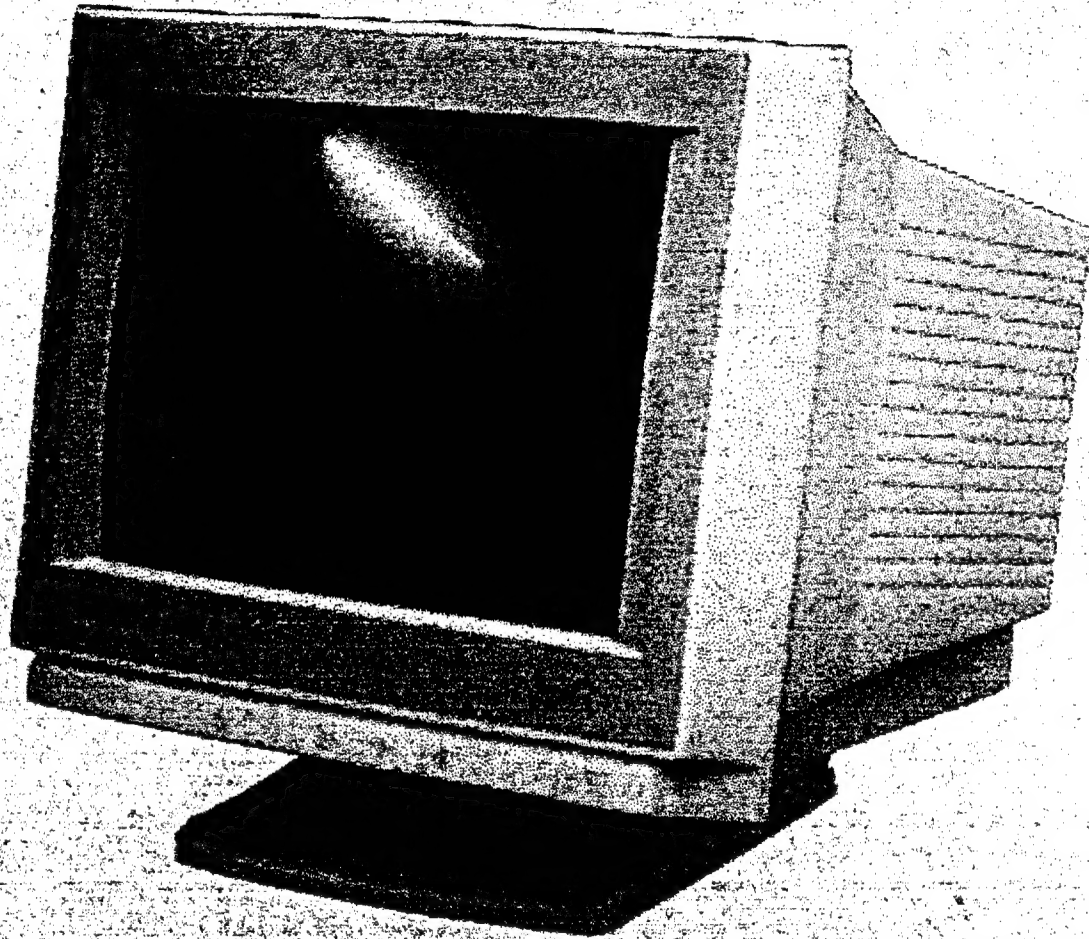


TAXAN



Service Manual

For the Ergovision 400 LR and Ergovision 410 LR
14" Power Saving Colour Monitors

TAXAN *Ergovision 410LR Service Manual*

Manual Degaussing

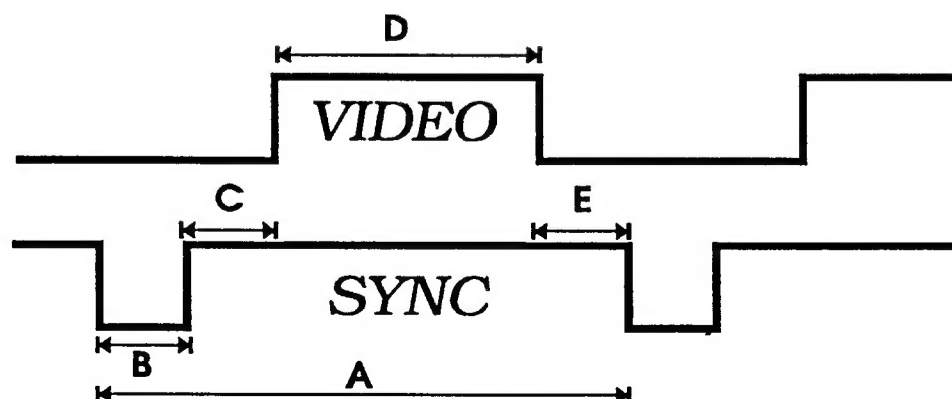
- 1 Apply line voltage to the degaussing coil and move it in a rotary motion over the front, sides , and top of the monitor. The coil should be kept away from the rear of the monitor to avoid damaging the magnetic neck components.
- 2 Slowly rotate and move the coil away from the monitor to about 6 feet beyond the point where no effect on the CRT will be noticeable.

For proper degaussing, it is essential that the field be gradually reduced by moving the coil slowly away from the monitor. The degaussing coil must never be shut off or disconnected while near the monitor, as this would introduce a strong field instead of canceling the effect of the stray fields.

TAXAN Ergovision 410LR Service Manual

TIMING CHART

	Mode 1	Mode 2	Mode 3	Mode 4	Mode 5	Mode 6
Hori. Dots	640	720	640	800	1024	640
Vert. Lines	350	400	480	600	768	480
Hori. Frequency (KHz)	31.47	31.47	31.47	35.16	35.52	37.86
Sync. Polarity	POS	NEG	NEG	POS/NEG	POS	NEG
A us	31.78	31.78	31.78	28.44	28.1	26.413
B us	3.81	3.81	3.81	2	3.91	1.27
C us	1.907	1.907	1.907	3.556	1.25	4.06
D us	25.42	25.42	25.42	22.22	22.81	20.317
E us	0.636	0.636	59.95	0.667	0.178	0.76
Vert. Frequency (Hz)	70.08	70.08	72.19	56.25	86.96	72.81
Sync. Polarity	POS	POS	POS	POS/NEG	POS	NEG
A ms	14.27	14.27	16.68	17.78	11.5	13.735
B us	0.064	0.064	0.064	0.057	0.112	0.079
C us	1.87	1.08	1.02	0.626	0.577/ 0.653	0.74
D ms	11.12	12.71	15.25	17.07	10.82	12.678
E ms	1.21	0.413	0.35	0.053	14μ S/O	0.238

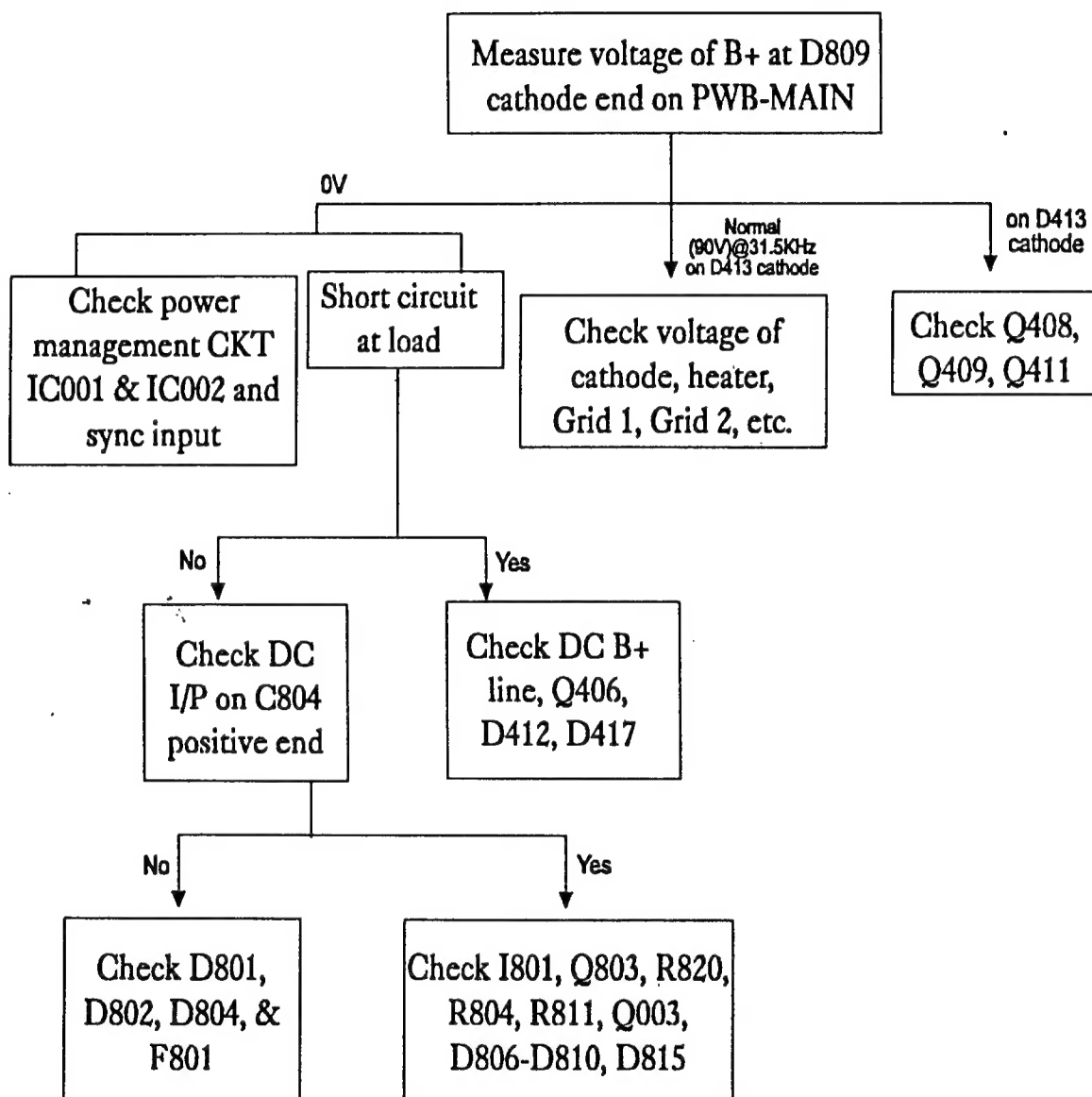


TAXAN Ergovision 410LR Service Manual

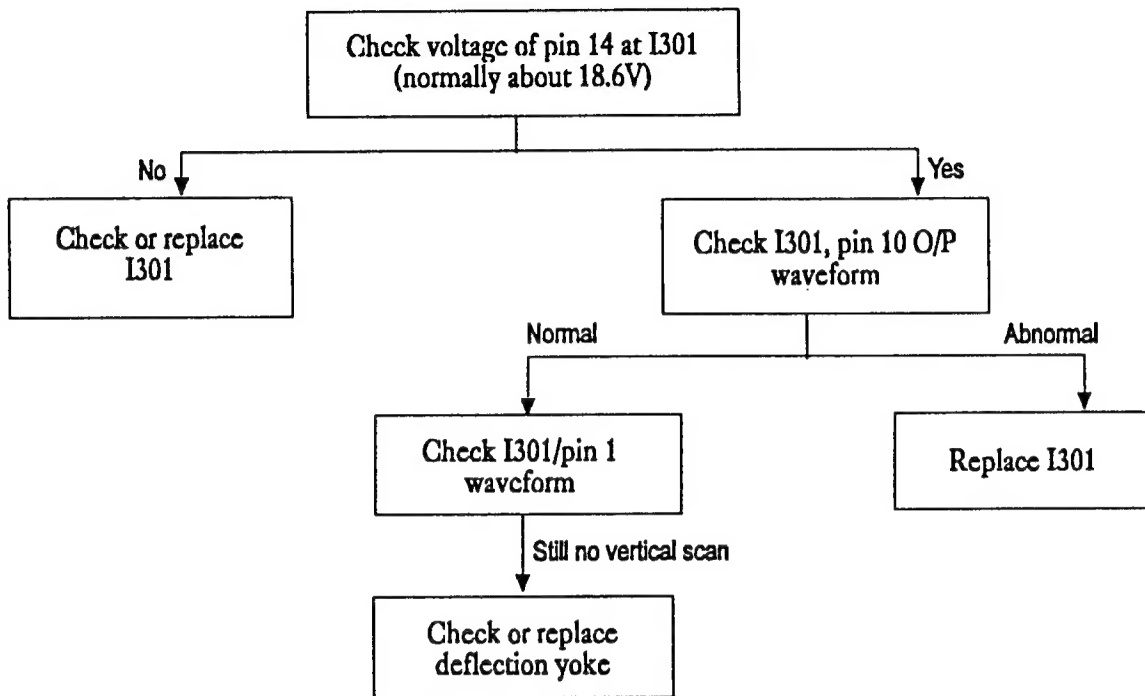
	Mode 7	Mode 8	Mode 9	Mode 10	Mode 11
Hori. Dots	800	640	720	800	1024
Vert. Lines	600	350	400	600	768
Hori. Frequency (KHz)	37.88	37.86	37.86	48.08	48.36
Sync. Polarity	POS	POS	NEG	POS	NEG
A us	26.4	26.413	26.413	20.8	20.677
B us	3.2	1.27	1.27	2.4	2.23
C us	2.2	4.063	4.063	1.28	2.622
D us	20	20.317	20.317	16	15.75
E us	1	0.762	0.762	1.12	0.639
Vert. Frequency (Hz)	60.32	84.14	84.14	72.01	60
Sync. Polarity	POS	NEG	POS	POS	NEG
A ms	16.58	11.886	11.886	13.87	16.67
B us	0.106	0.079	0.097	0.125	0.124
C us	0.607	1.638	1.004	0.478	0.6
D ms	15.84	9.244	10.565	12.51	15.88
E ms	0.026	0.924	0.238	0.77	0.062

TROUBLE SHOOTING CHART

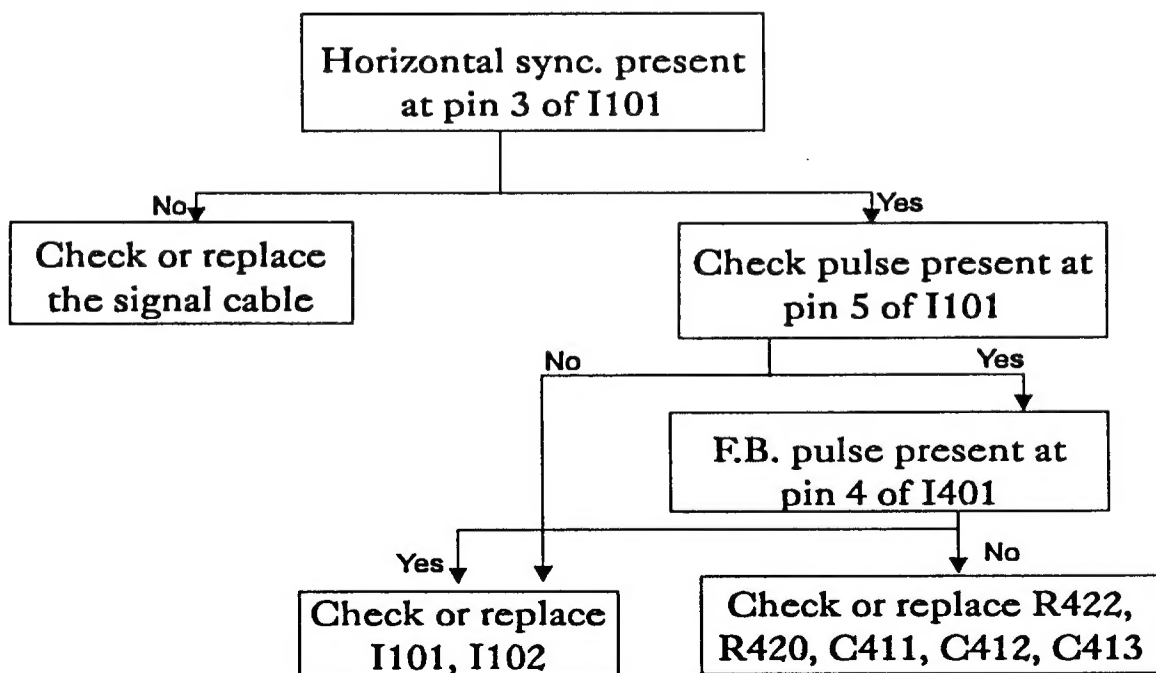
No Raster



No Vertical Scan (Raster is one horizontal line)

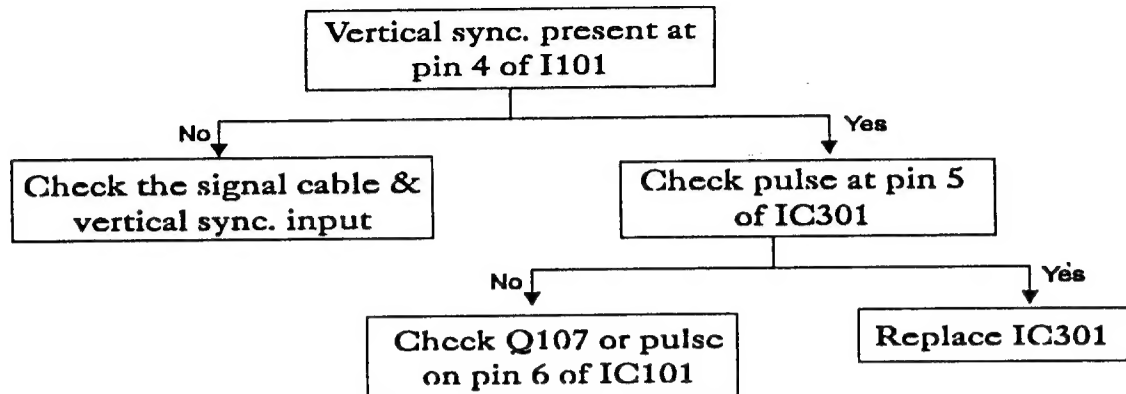


Out of Horizontal Synchronization

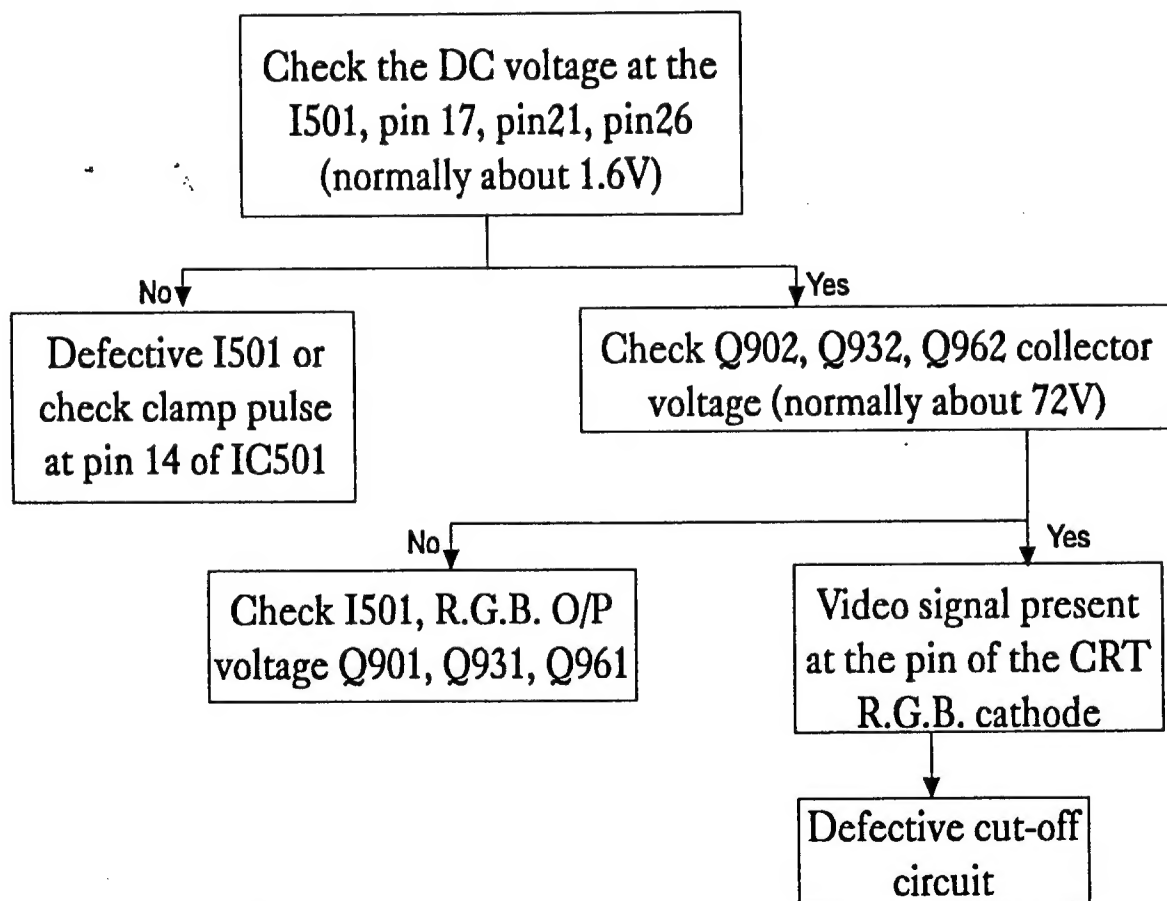


TAXAN Ergovision 410LR Service Manual

Out of Vertical Synchronization

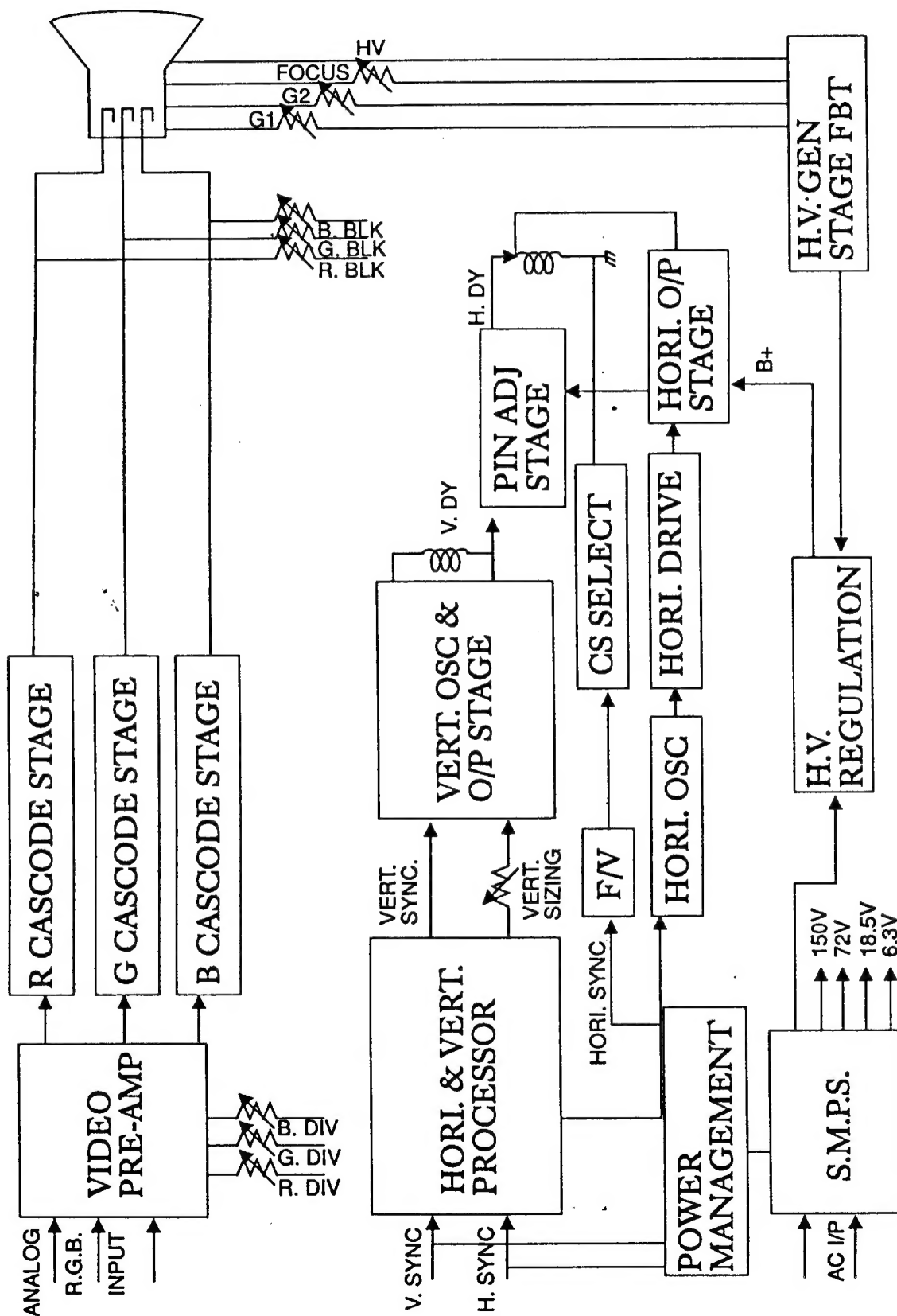


R. G. B. Video AMP Abnormal



TAXAN Ergovision 410LR Service Manual

BLOCK DIAGRAM

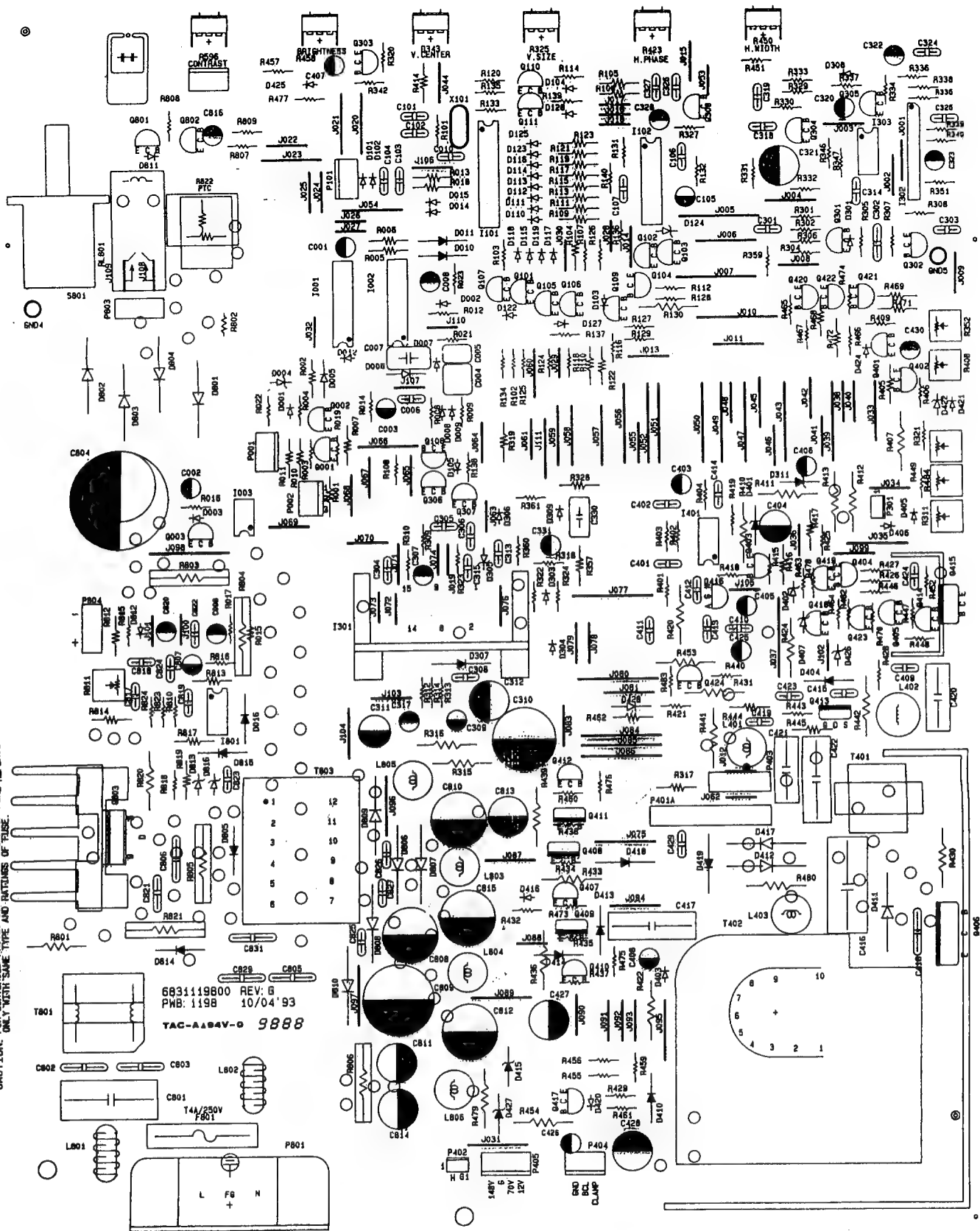


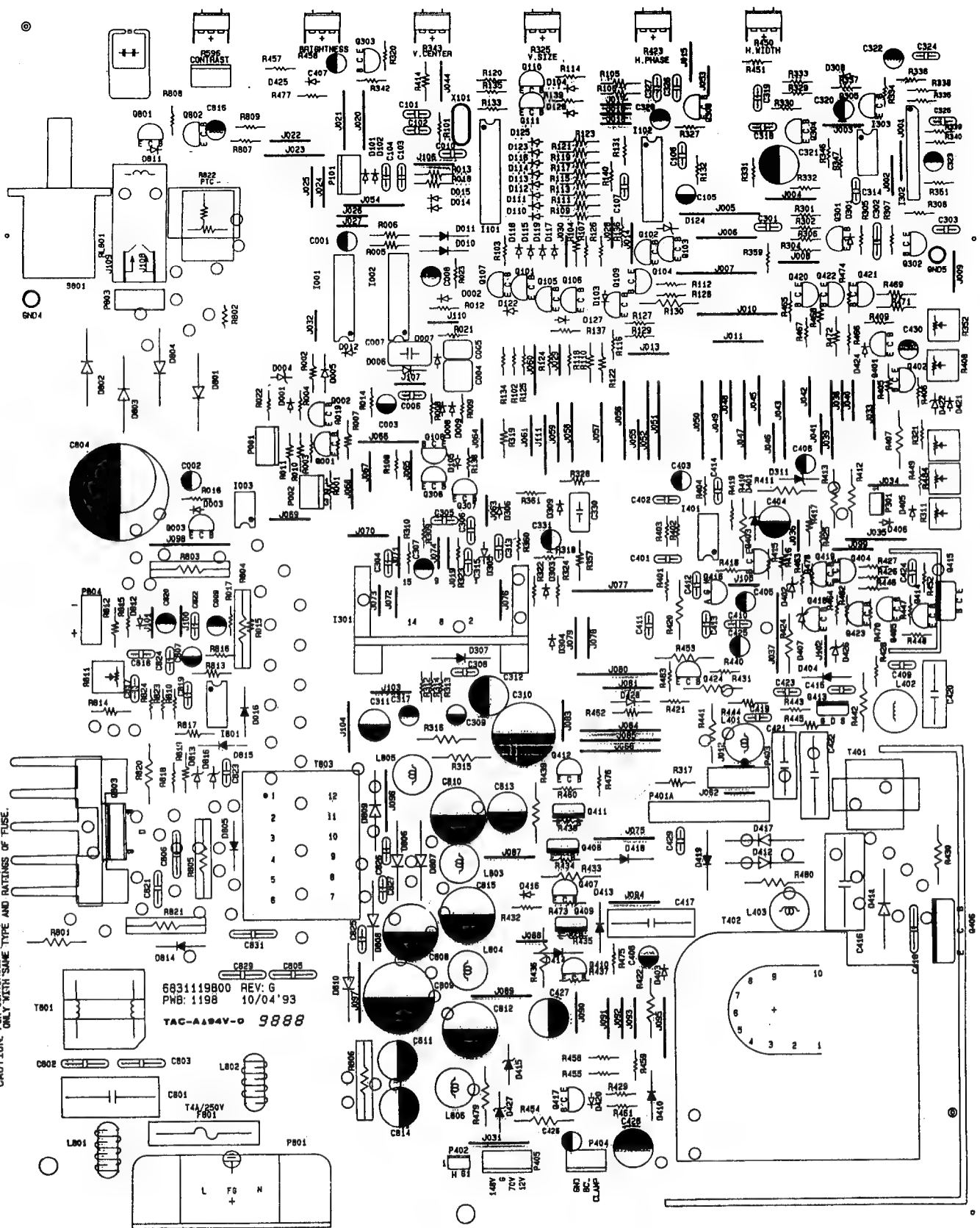
TAXAN Ergovision 410LR Service Manual

SPARE PARTS LIST

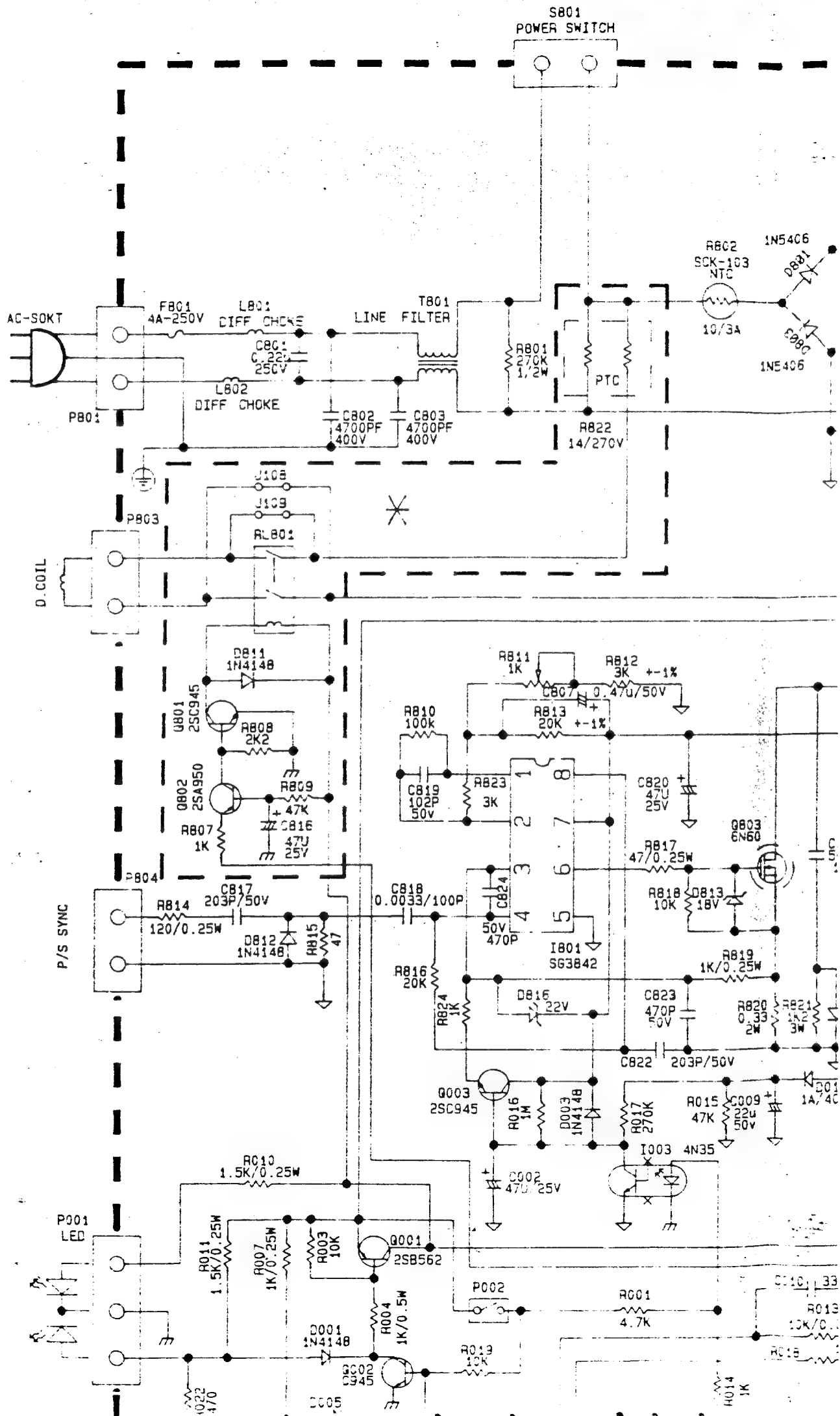
Location	Part Number	Description
Q406	6421000330	TR NPN 2SC4916 TOSHIBA
Q408, Q409, Q411	6424000600	TR PNP 2SB857C HITACHI
Q413	6426000280	FET N-CHNL IRF630 SGS-THOMAS SAMSUNG
Q803	6426001200	FET N-CHNL IRF730 TO-220F SGS-THOMAS SAMSUNG
D809, D810	6412004117	DIODE UF2004 T52 2A/400V 50nS LITE-ON
D808	6412012107	DIODE UF2005 T52 2A/600V 75nS LITE-ON
D806	6412001904	DIODE UF4007 T26 1A/1KV 75nS LITE-ON
D412, D417	6412004817	DIODE PR3006 T52 3A/800V 500nS LITE-ON
D411	6412002017	DIODE UF3004M T52 3A/400V 50nS LITE-ON
I501	6442000502 6442000500	IC 28P MM1203XD PLASTIC DIP MITSUMI IC 28P LINEAR LM1203 VIDEO NS
I801	6442002500	IC 8P LINEAR SG3842M SGS-THOMAS
I003	6442001201	IC 6P LINEAR 4N35 TELEFUNKEN
I301	6442001400	IC 15P LINEAR TPA1675A SGS-THOMAS
I401	6442000300	IC 8P LINEAR MC1391P MOTOROLLA
I101	6442009200	IC 20P WT8043N20 (ASIC) DIP WELTREND
F801	6851004050	FUSE TIME LAG 4A/250V SEMKO BEL

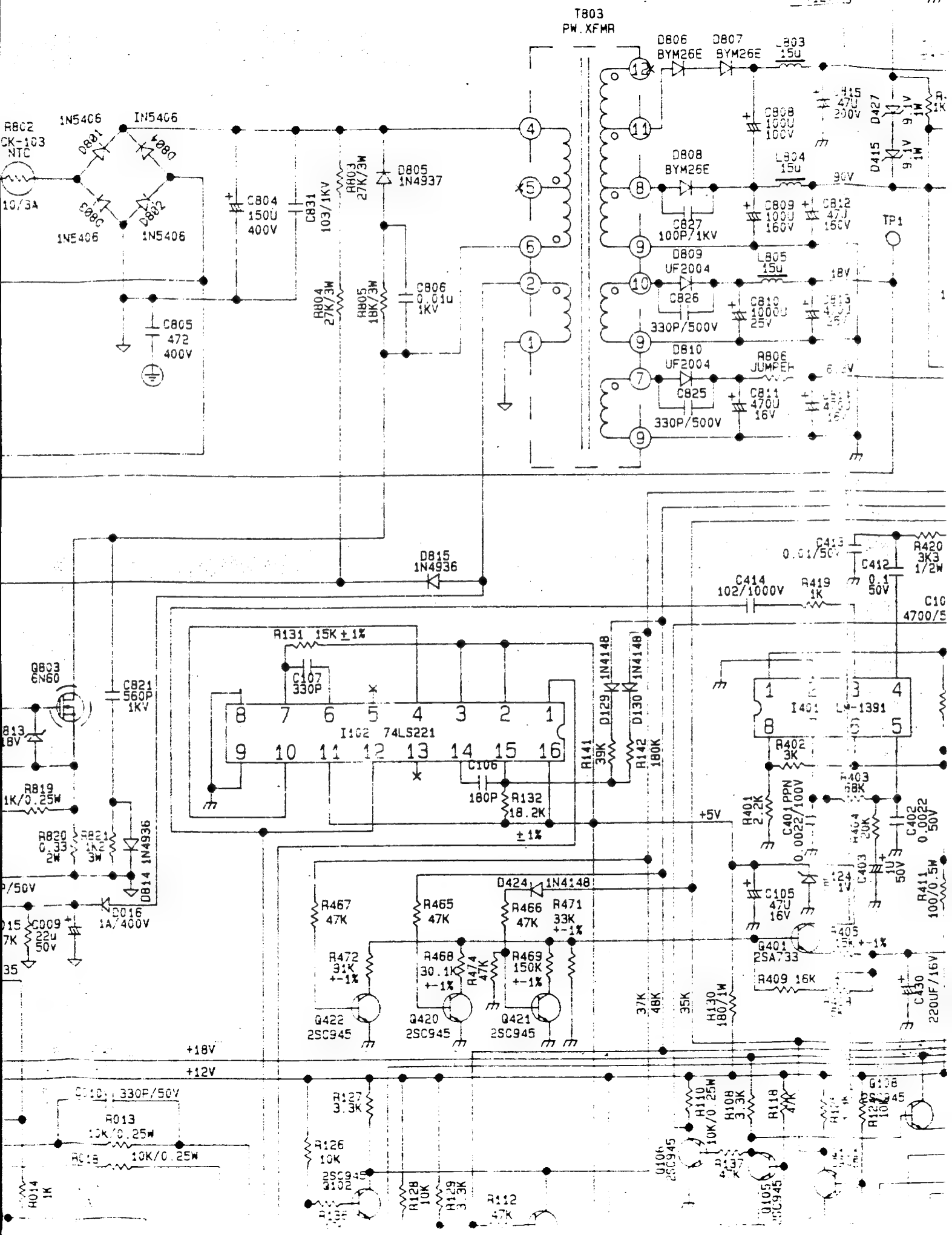
CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE REPLACE ONLY WITH SAME TYPE AND RATINGS OF FUSE.

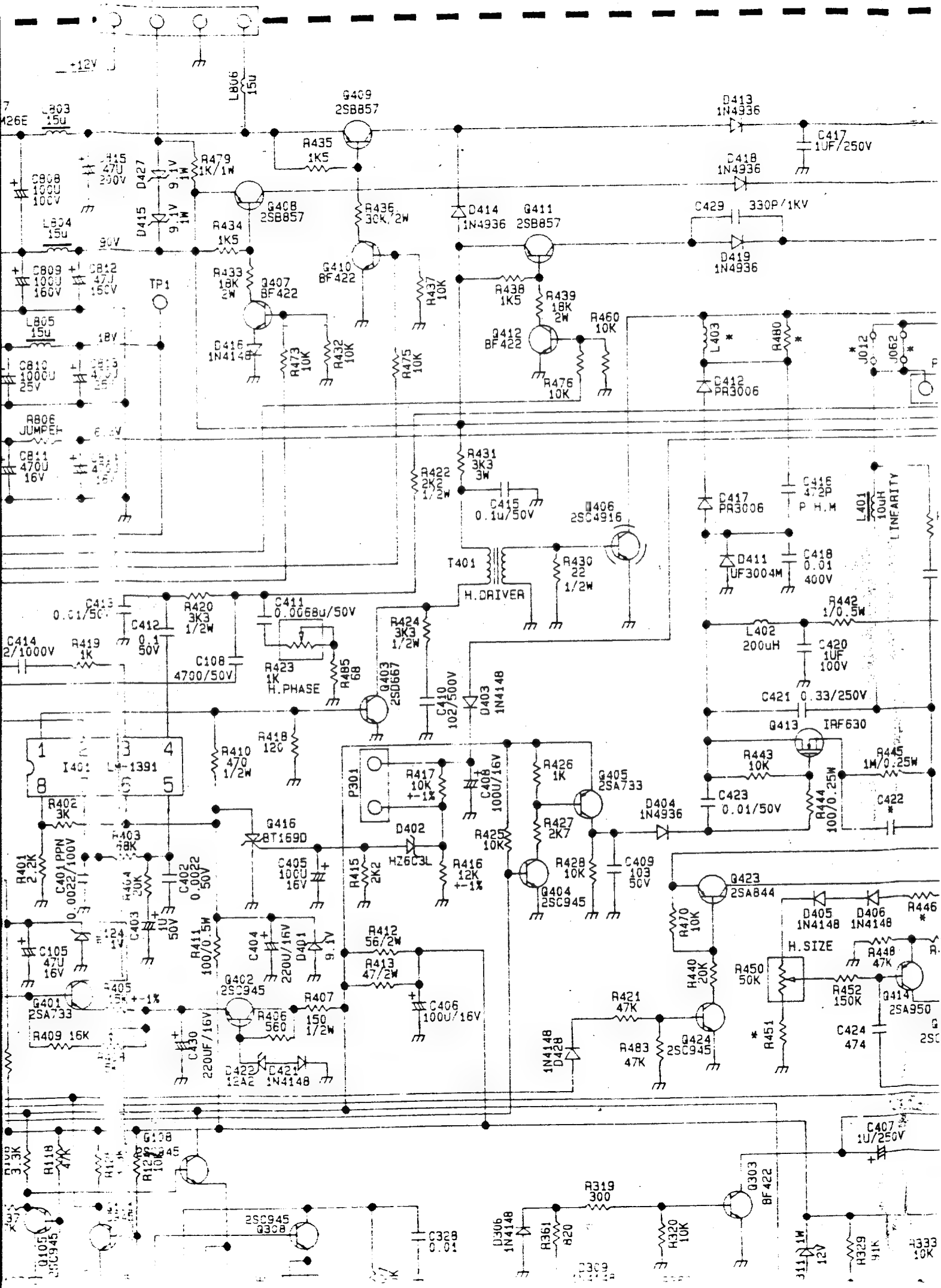


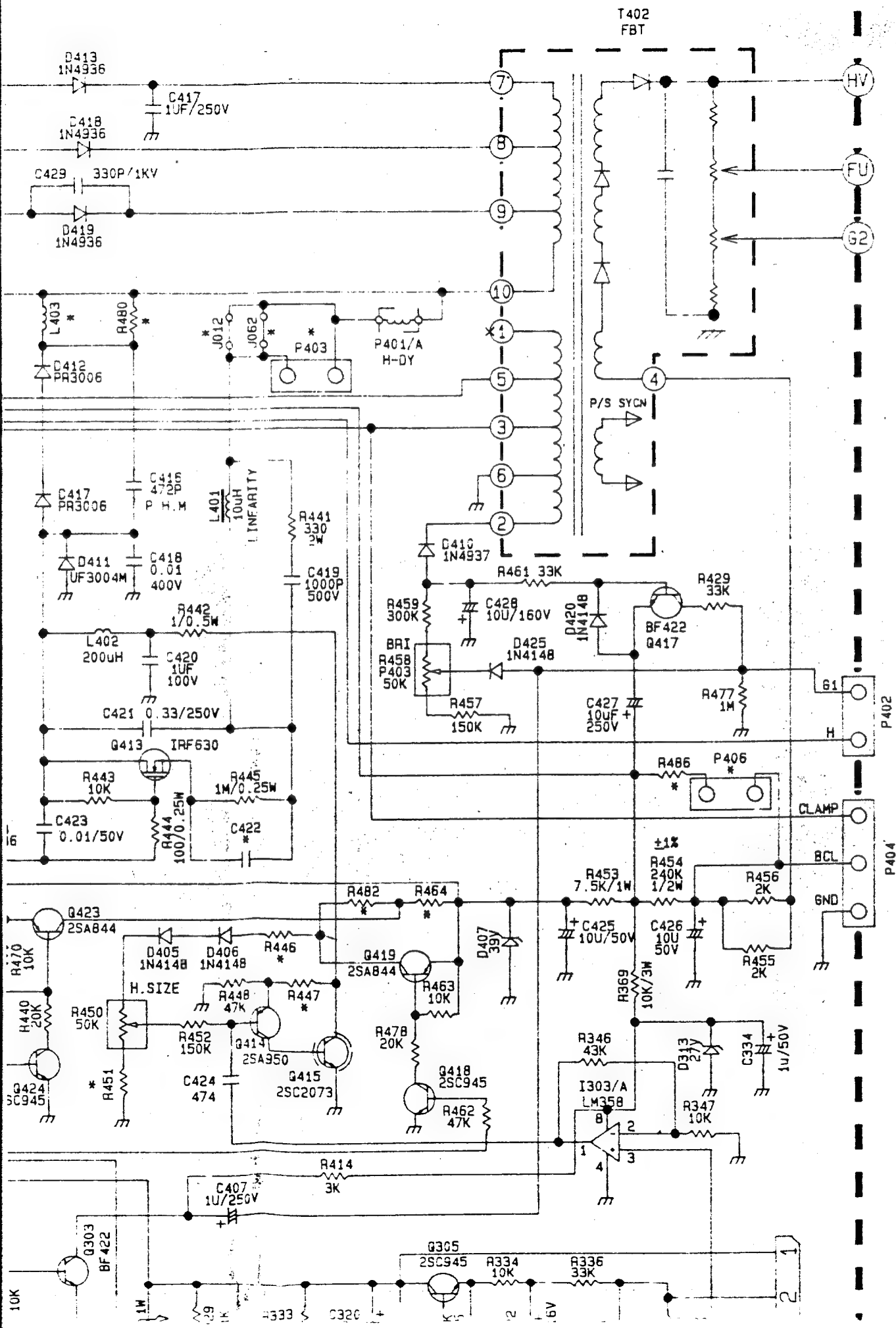


5831119800 REV: G
PWB: 1198 10/04'93
TAC-A194V-0 9888







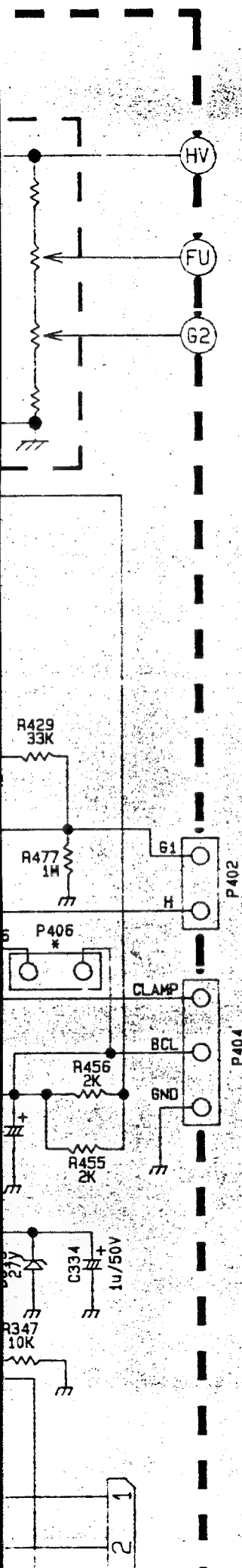


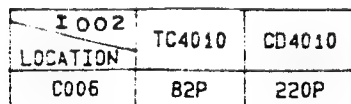
REVISION HISTORY

REV.: 01

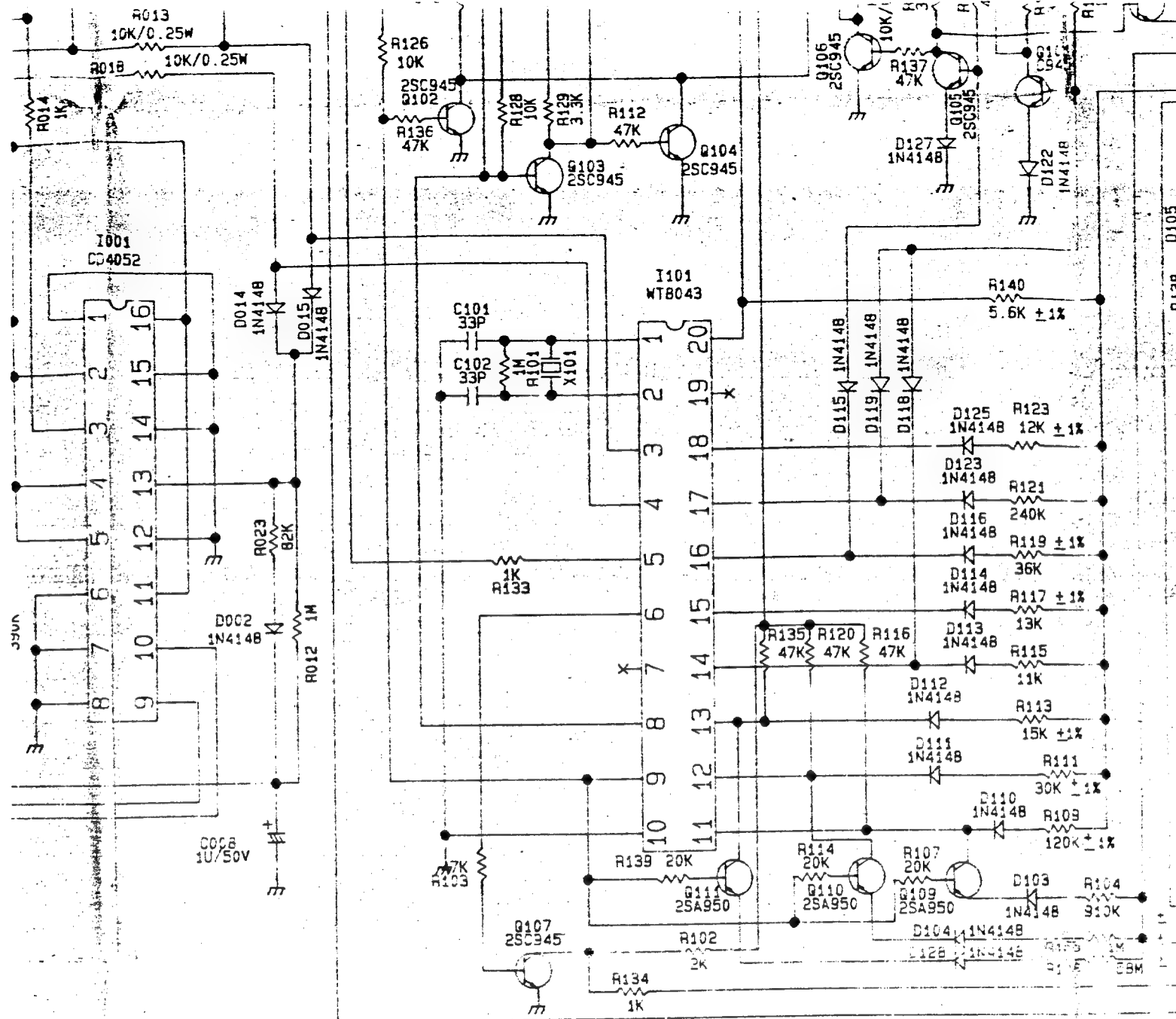
DATE: 02/01'94

ECN NO: 9000002197	11/24'93
ECN NO: 9000002203	11/26'93
ECN NO: 9000002211	11/29'93
ECN NO: 9000002219	12/03'93
ECN NO: 9000002240	12/13'93
ECN NO: 9000002249	12/16'93
ECN NO: 9000002260	12/22'93
ECN NO: 9000002270	12/28'93
ECN NO: 9000002281	01/05'94
ECN NO: 9000002289	01/11'94
ECN NO: 9000002323	01/25'94

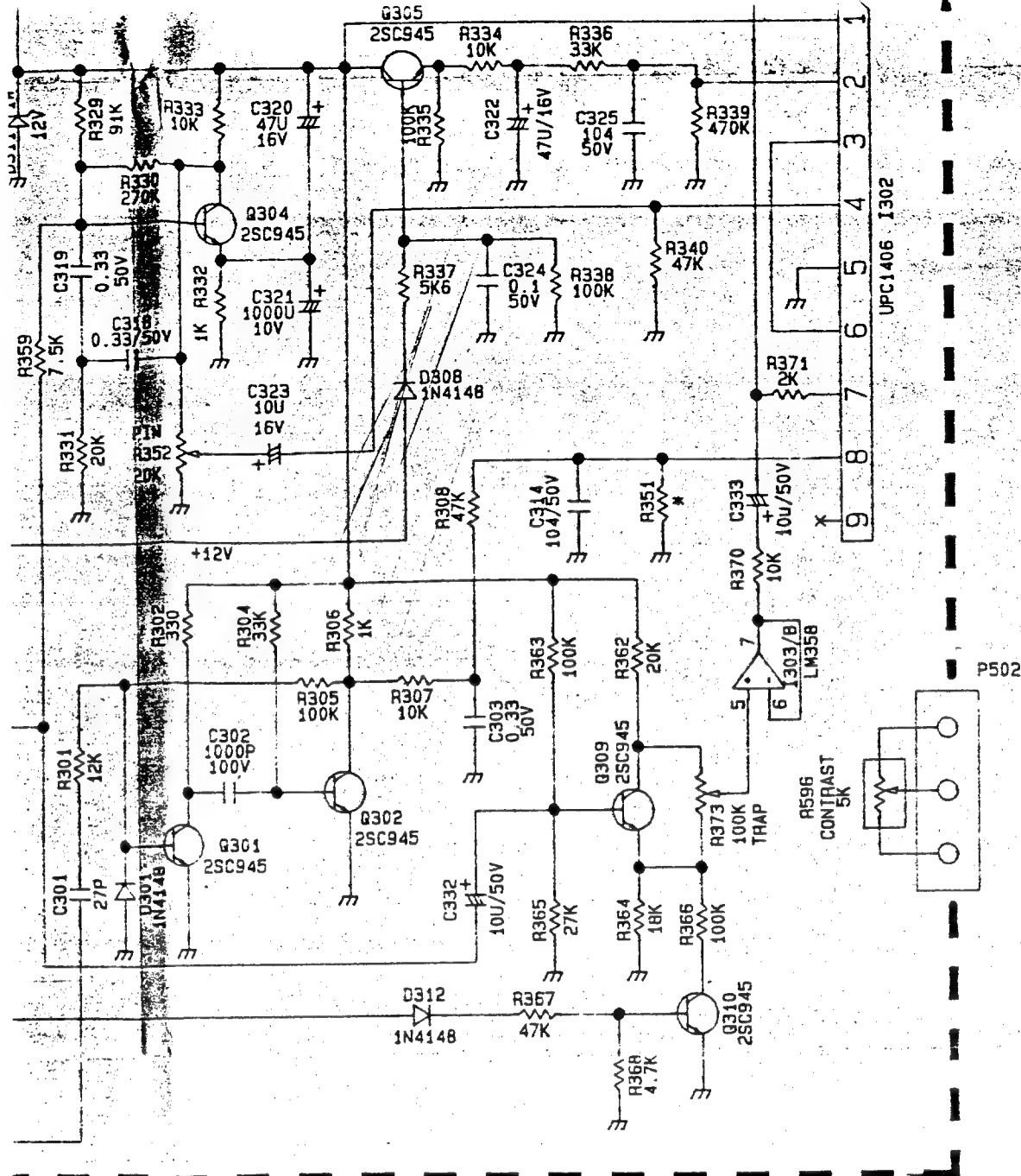




1448		
	MATSH (CO)	SPT (CA)
CRT	M34KN2280X05	M34AFAB0X18
LOCATION		
R464	24K	36K
R451	6.2K	5.1K
R446	6.2K	18K
R447	6B	6B
R482	27K	39K
R315	1.0	1.1
L403	JUMPER	3.2u
R480	JUMPER	33/2W
R351	180K	180K
J012	-	JUMPER
J062	-	JUMPER
P403	6614030010	-
C422	0.39u/250V	0.39u/250V
R486	-	2.2M
P406	-	6611020001



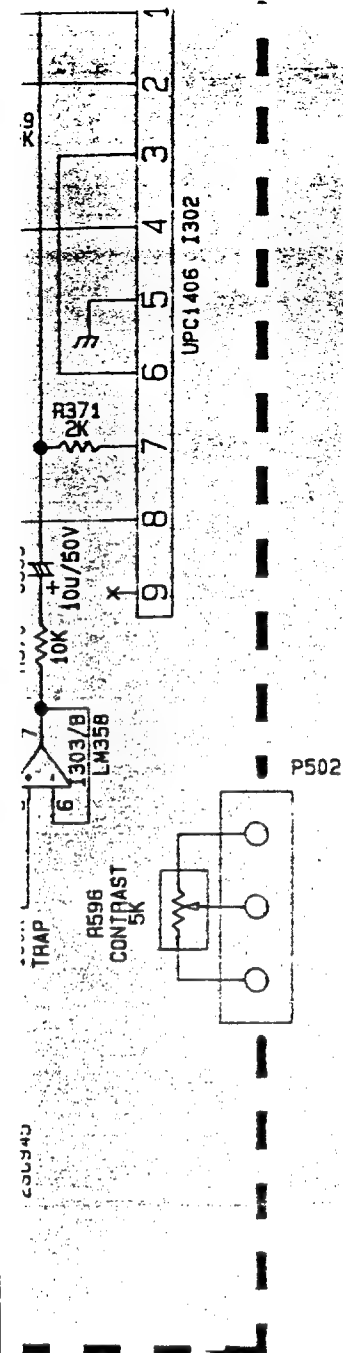
1448TLR				1448T			
CPT (CA)	HIT (CB)			MATSH (CO)	CPT (CA)	HIT (CB)	
M34AFAB0X1B	M34KDI50X02 (S)			M34KNZ280X05	M34AFAB0X03	M34KDD50X02 (J)	
36K	4K			24K	24K	24K	
5.1K	1.2K			8.2K	18K	8.2K	
18K	5.2K			6.2K	6.2K	6.2K	
68	560			560	560	560	
39K	27K			27K	39K	27K	
1.1	1.1			1.0	1.1	1.1	
3.2u	JUMPER			JUMPER	3.2u	JUMPER	
33/2W	JUMPER			JUMPER	33/2W	JUMPER	
180K	120K			180K	180K	120K	
JUMPER	-			JUMPER	JUMPER	JUMPER	
JUMPER	-			JUMPER	JUMPER	JUMPER	
-	5614030010			-	-	-	
0.39u/250V	0.33u/250V			0.39u/250V	0.39u/250V	0.33u/250V	
2.2M	-			-	2.2M	-	
661102000	-			-	6611020090	-	



DRAWN : <i>Regina Ni</i>	DATE : 02/01'94
CHECK : <i>John Chen</i>	DATE : 2/5/94
APPRO : <i>John Chen</i>	DATE : 2/5/94
DESING : <i>John Chen</i>	DATE : 2/5/94
CHECK : <i>John Chen</i>	DATE : 2/5/94
APPRO : <i>John Chen</i>	DATE : 2/5/94

Model:	Ergo
DWG No:	891
PCB No:	683

TW



TAXI

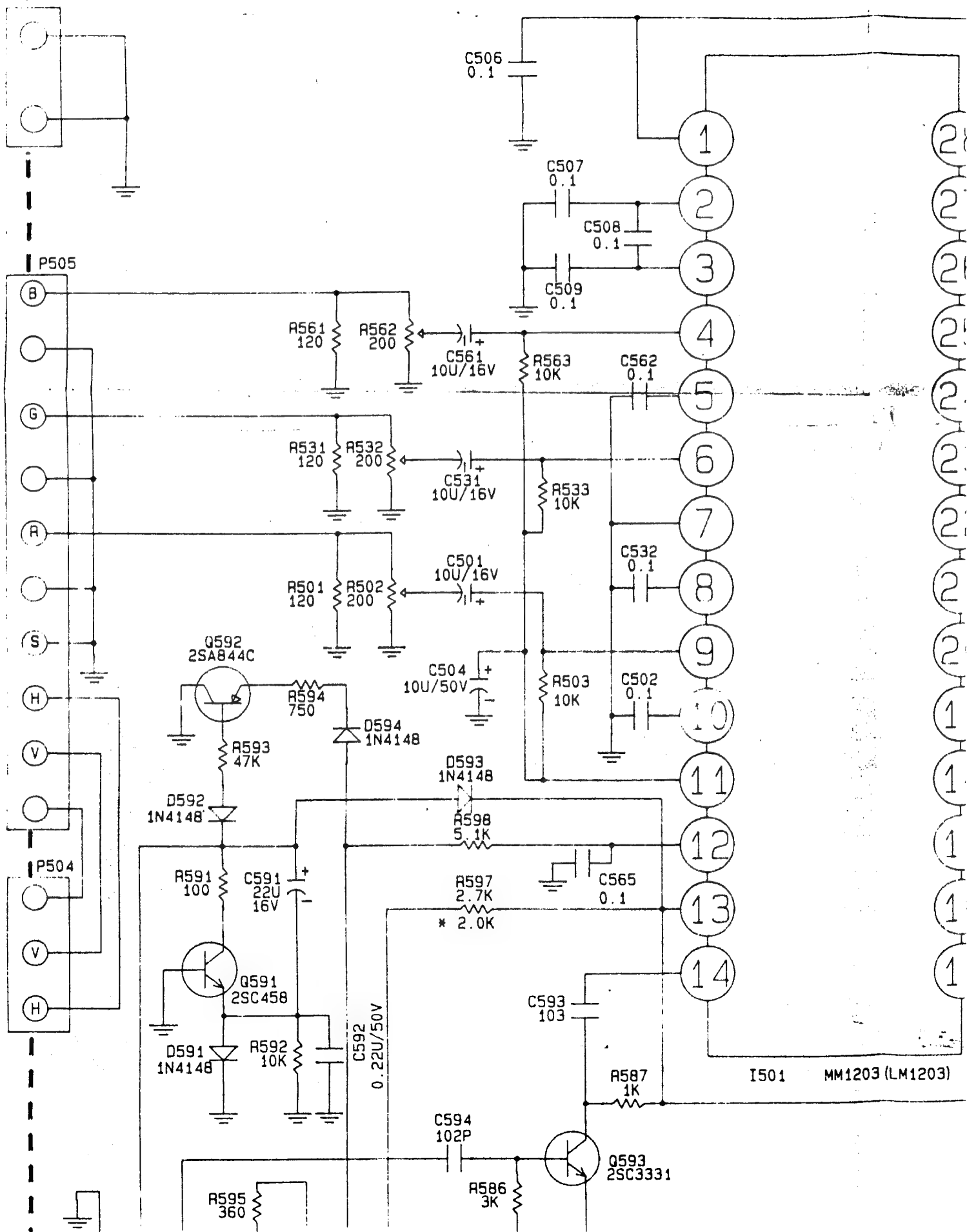
Model: **Ergovision 410LR**

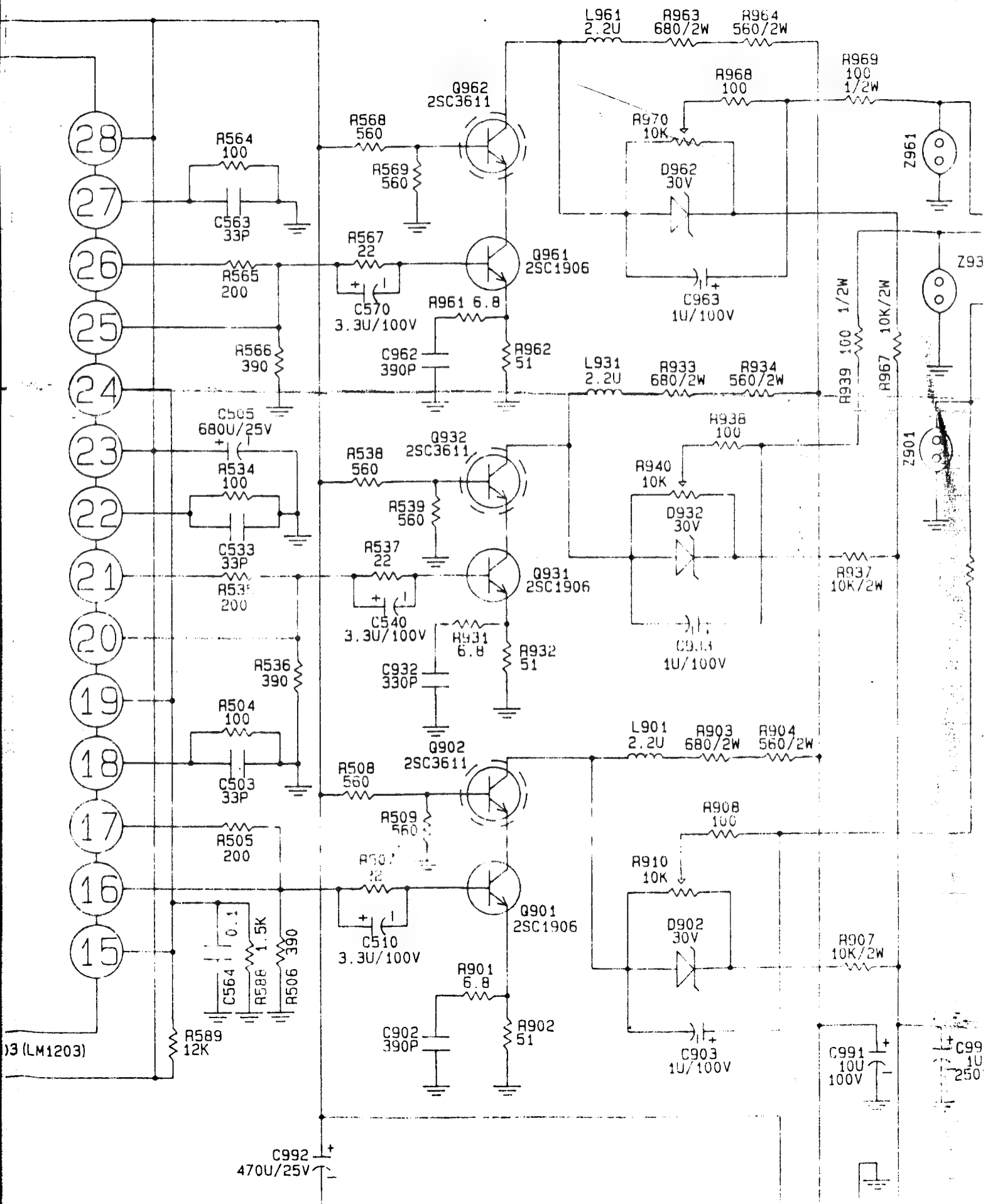
DWG No: **8911980000**

PCB No: **6831119800**

Rev:02

TO CRT GND
P902



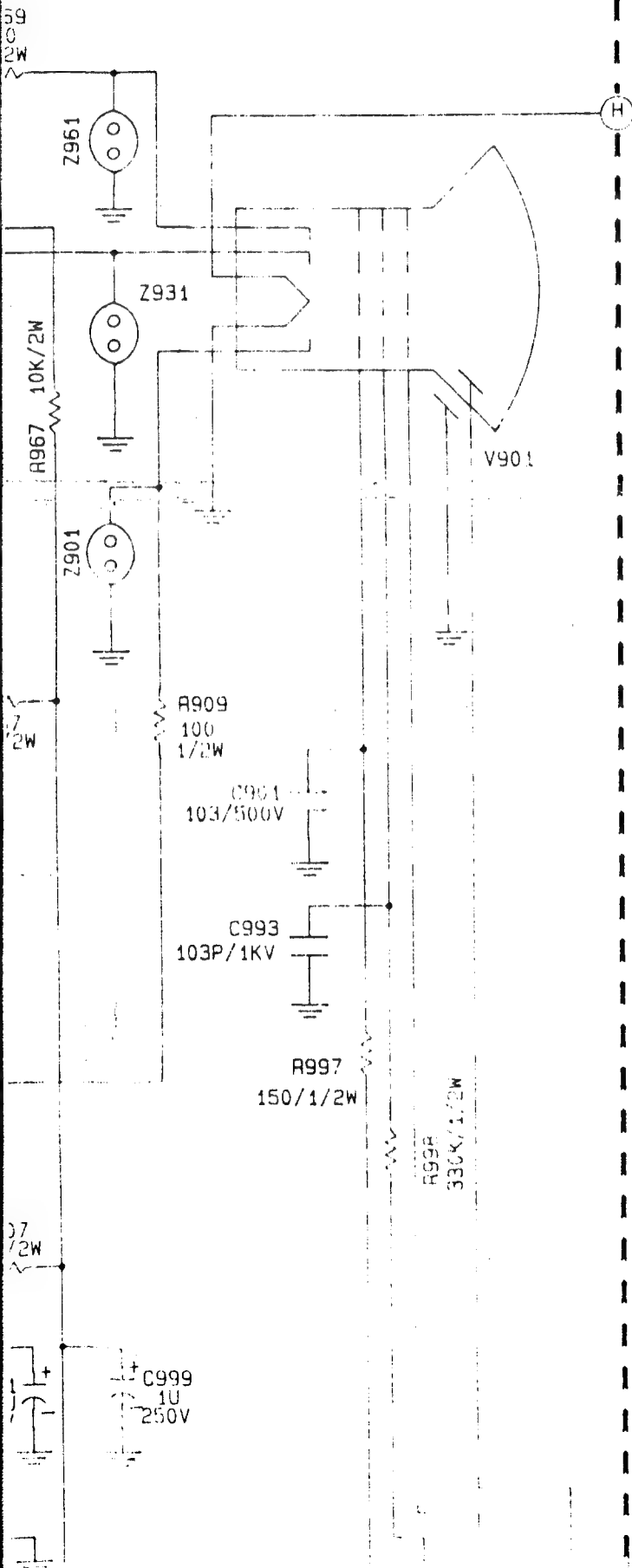


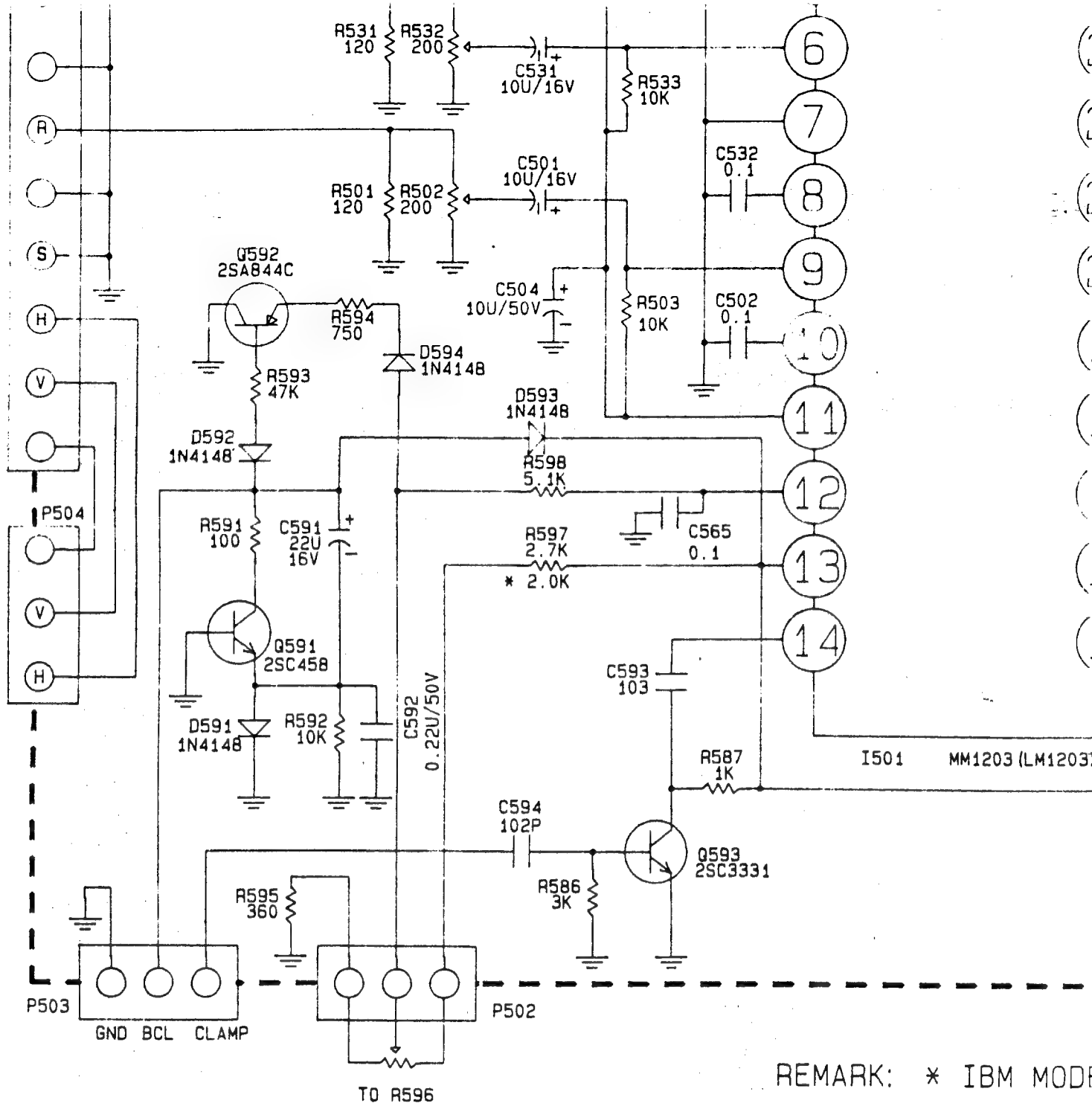
REVISION HISTORY

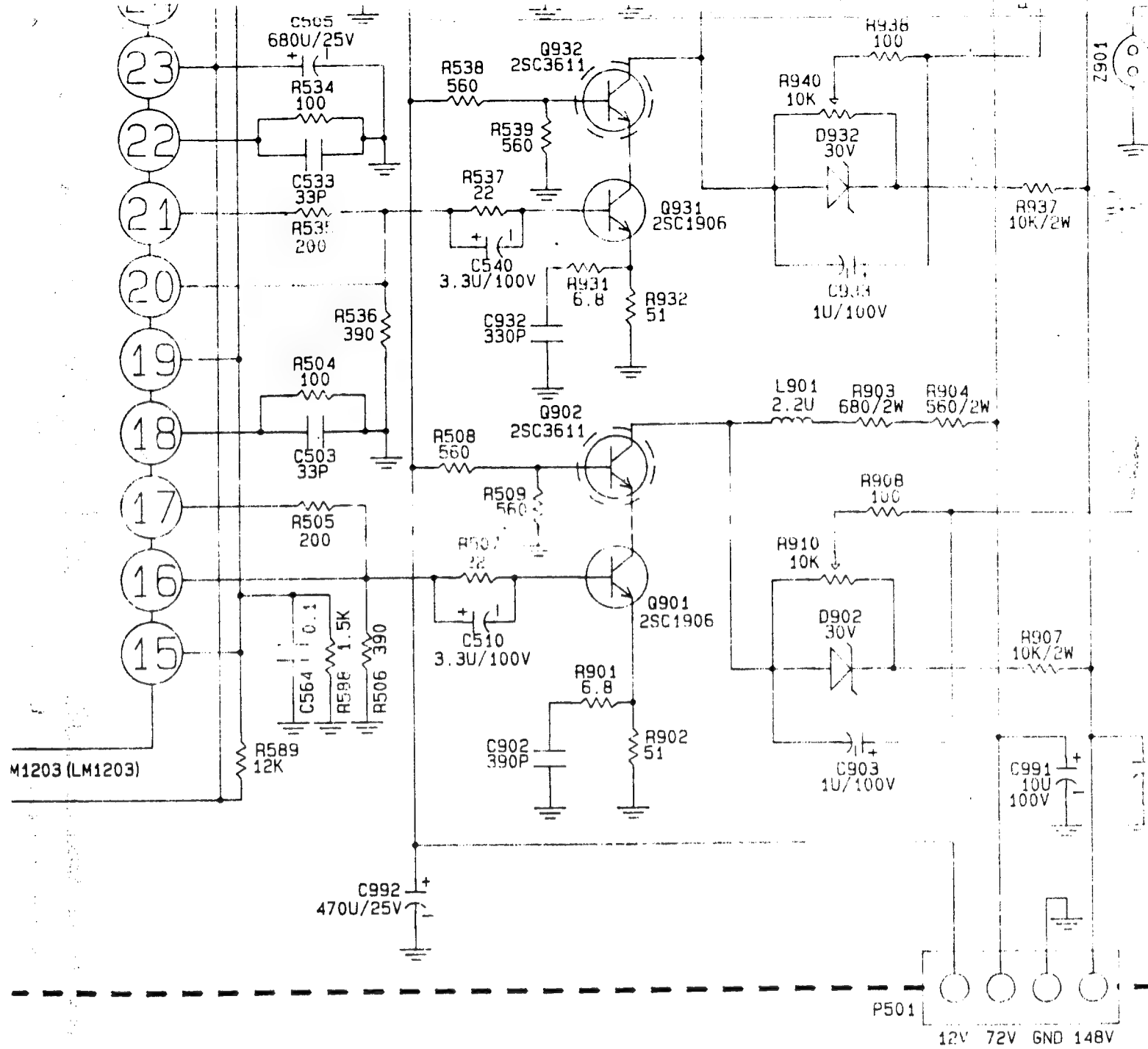
REV: 01 DATE: 01/19'94

ECN NO.: 9000002270

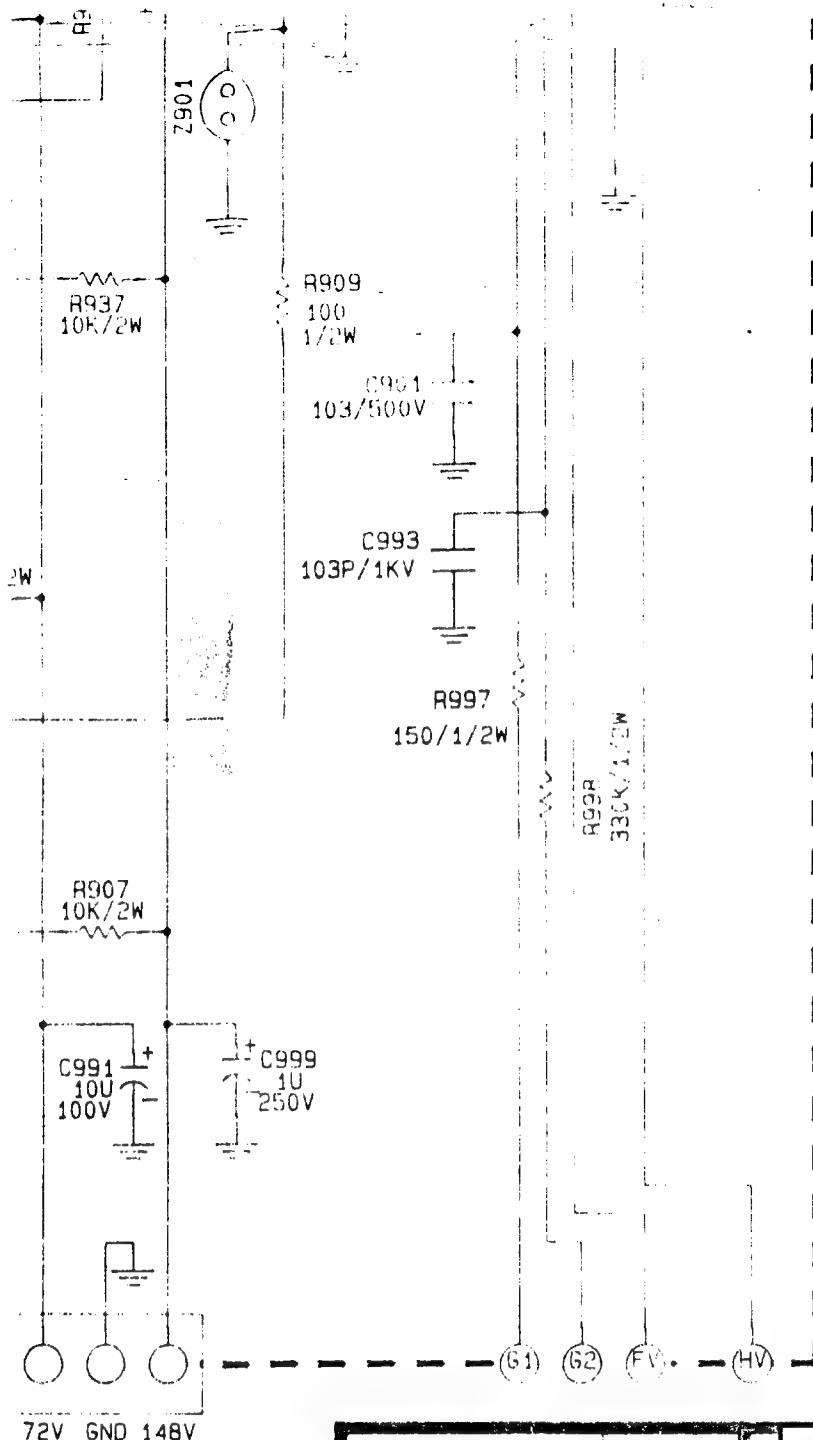
12/25/93







IBM MODELS ONLY



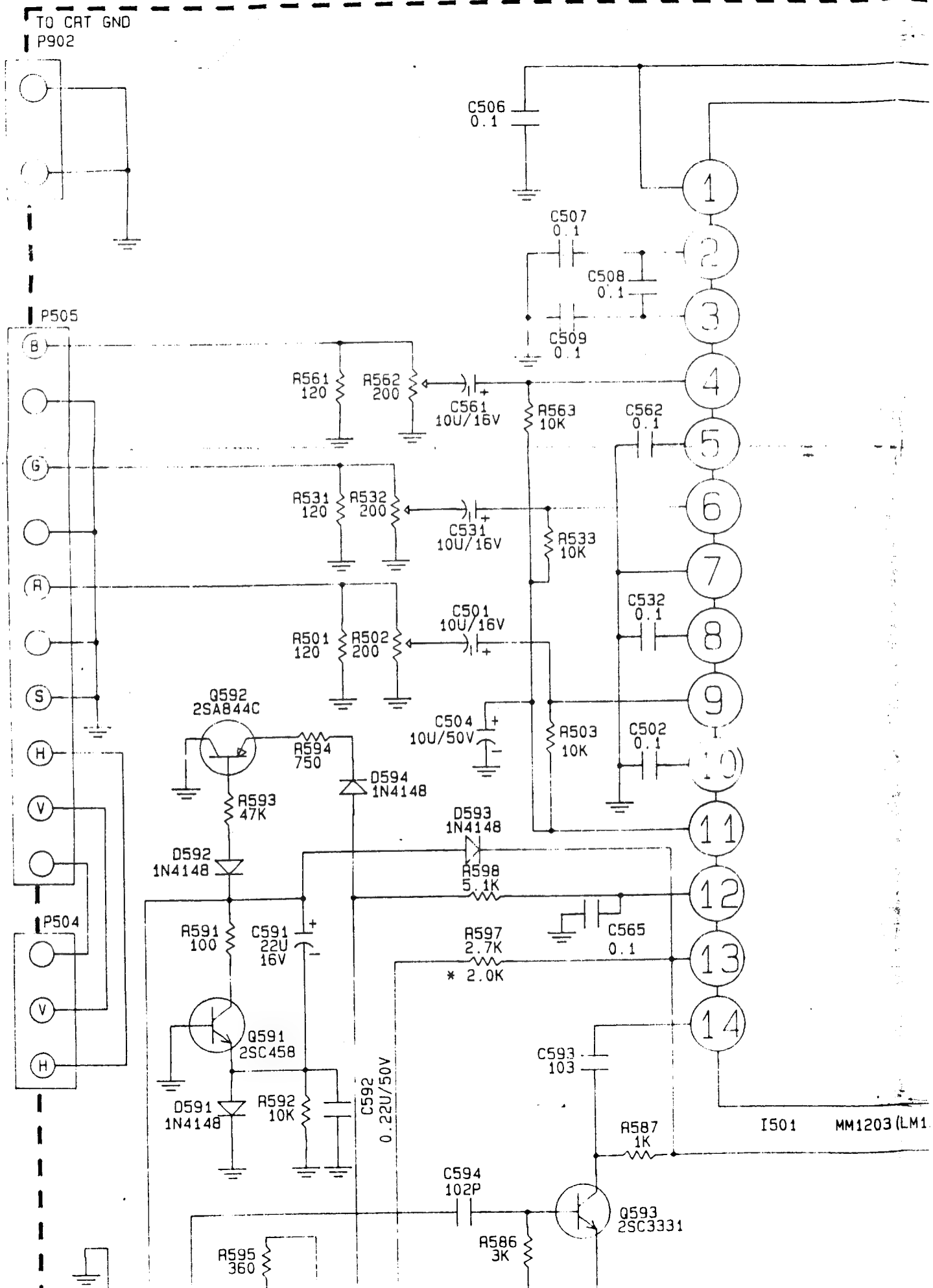
DRAWN: <i>Reginald Ho</i>	DATE: 01/19'94
CHK:	DATE:
APPROV: <i>John Chen</i>	DATE: 1/27/94
DESIGN: <i>Reginald Ho</i>	DATE:
CHECK: <i>John Chen</i>	DATE: 1/27/94
APPROVAL: <i>Tammie Chen</i>	DATE: 1/27/94

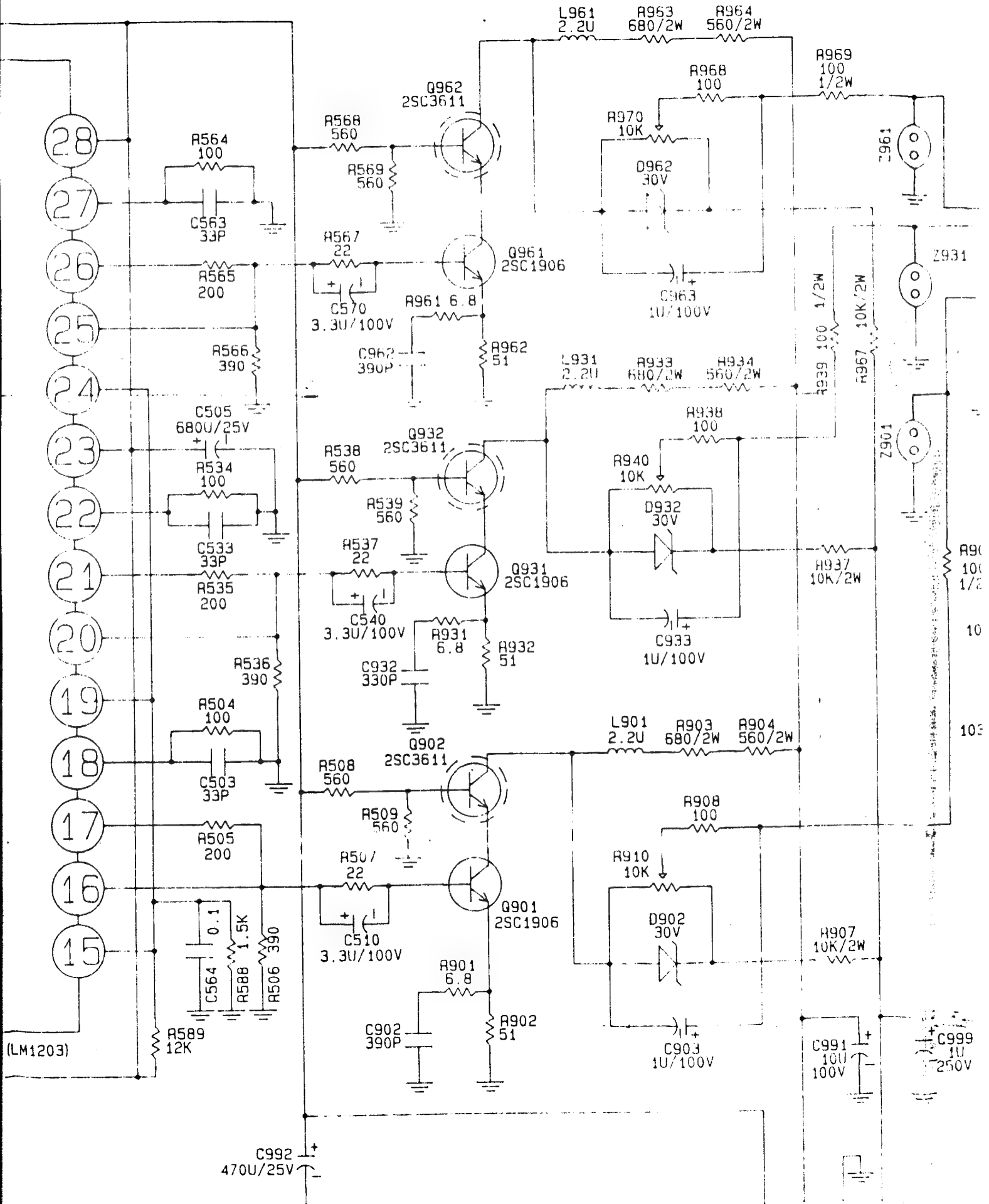
TAXAN

Ergovision 400/410 Video Board Circuit

Dwg No: 8912010000 Rev 2

PCB No: 6831120100



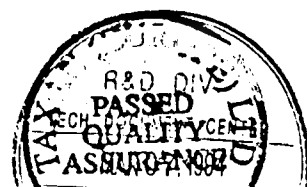
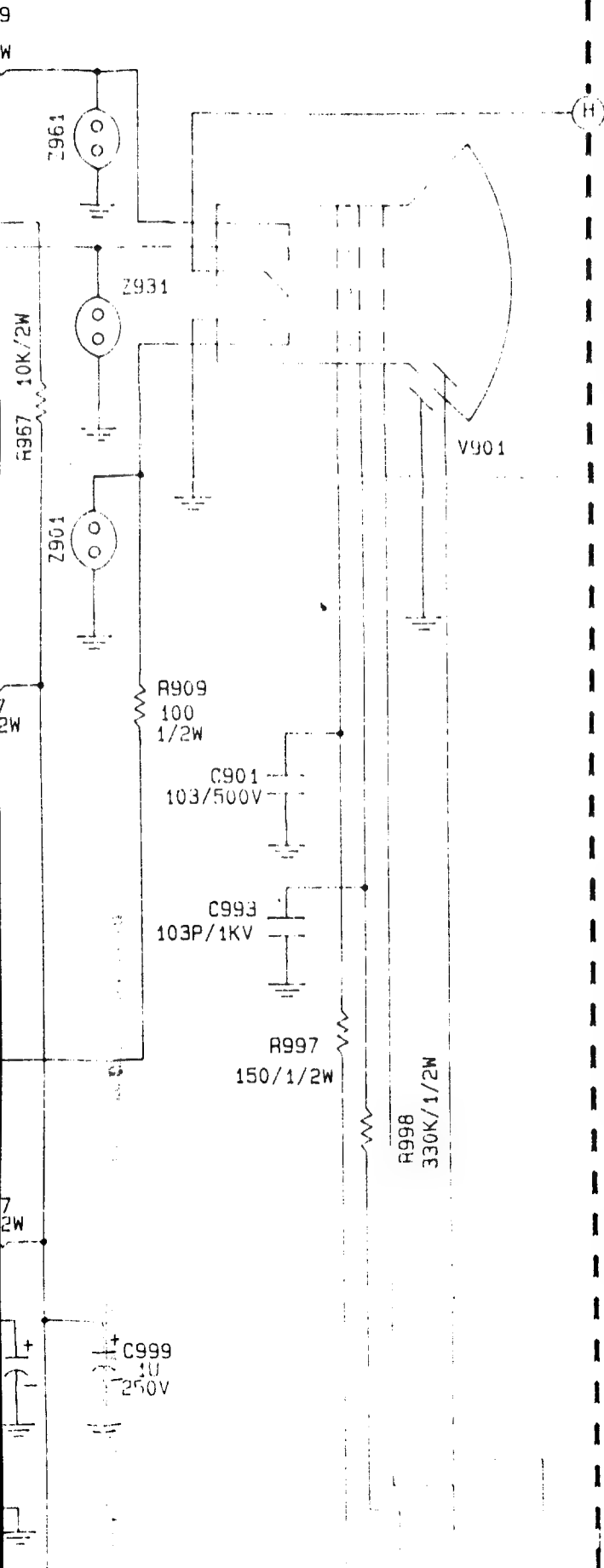


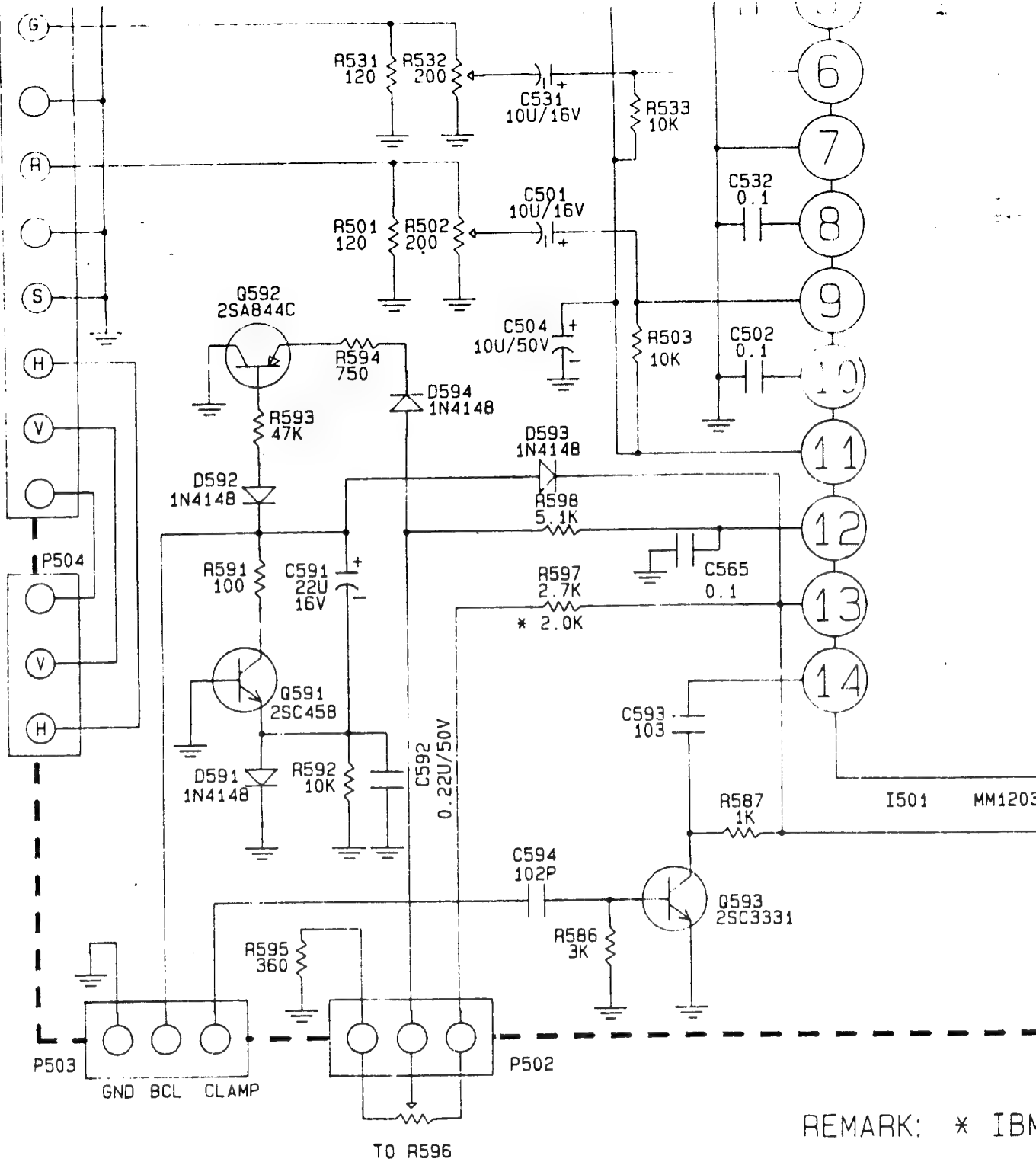
REVISION HISTORY

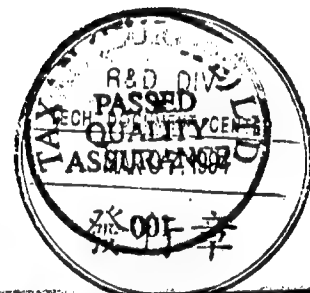
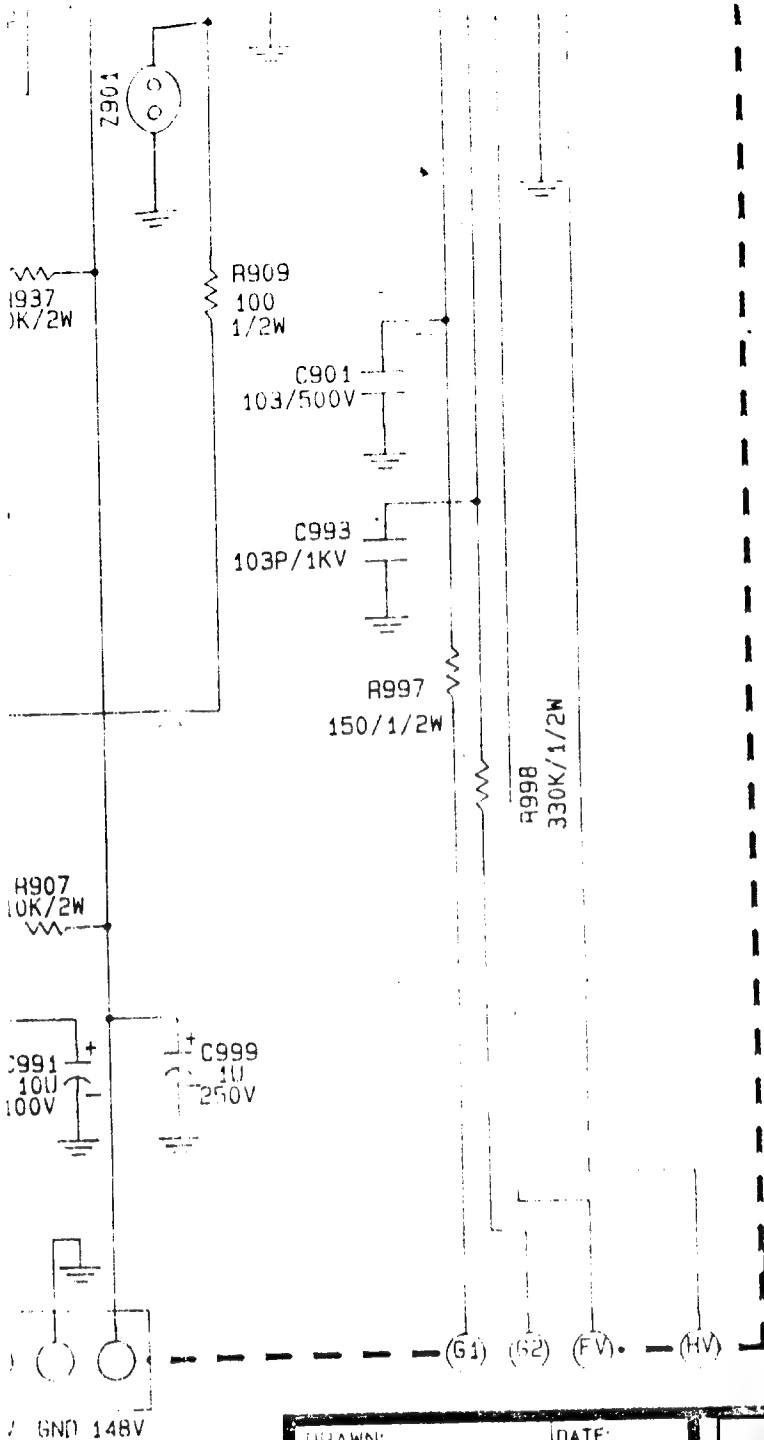
REV: 01 DATE: 01/19'94

ECN NO.: 9000002270

12/24/93







DRAWN:	DATE:
<i>Regina K</i>	01/19/94
CHK:	DATE:
APPROV.:	DATE:
<i>John Chen</i>	1/27/94
DESIGN:	DATE:
<i>Regina K</i>	1/27/94
CHECK:	DATE:
<i>John Chen</i>	1/27/94
APPROVAL:	DATE:
<i>Tammy Chen</i>	1/27/94

TAXAN

Ergovision 400/410 Video Board Circuit

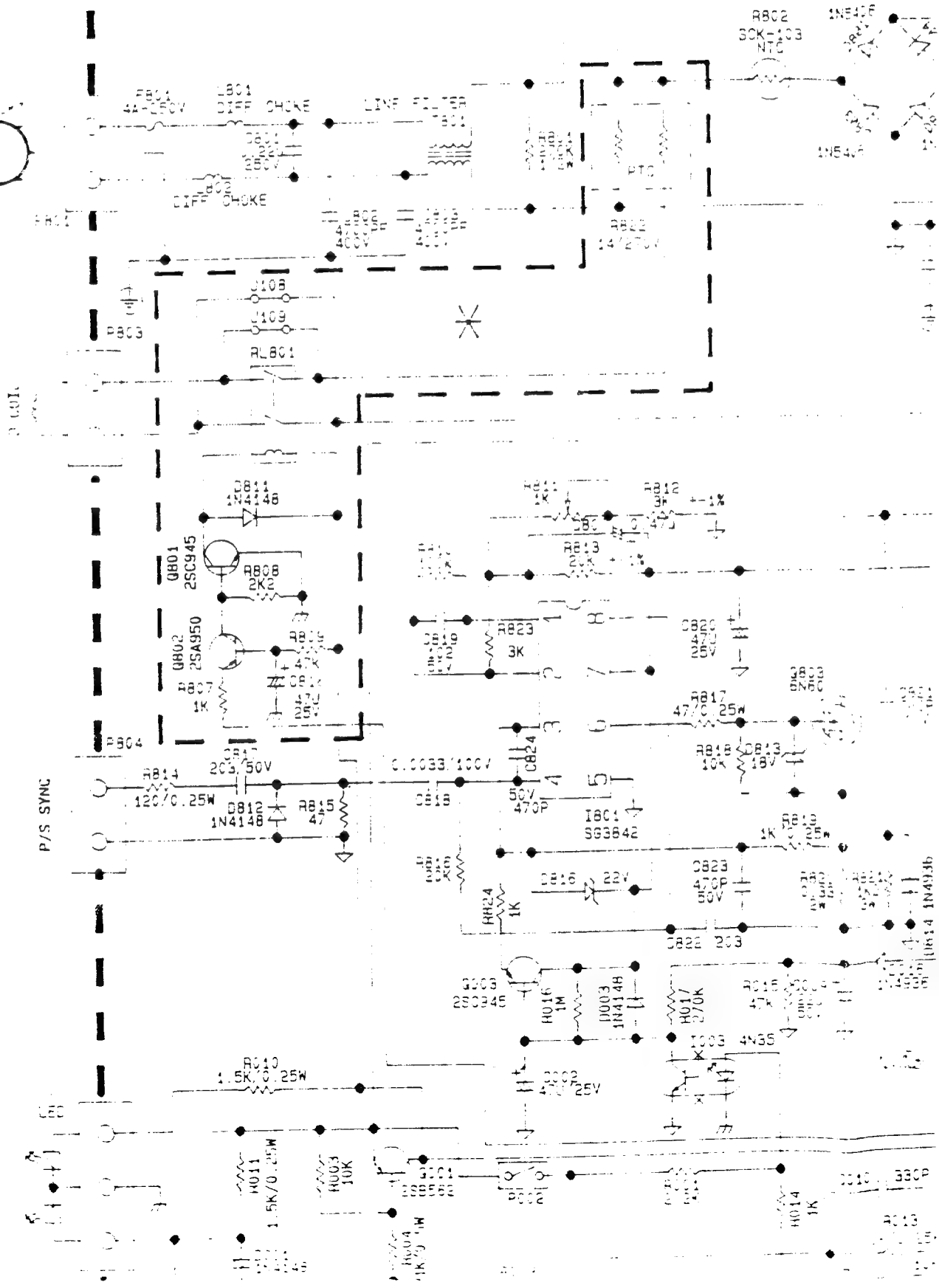
Dwg No: 8912010000 Rev 2

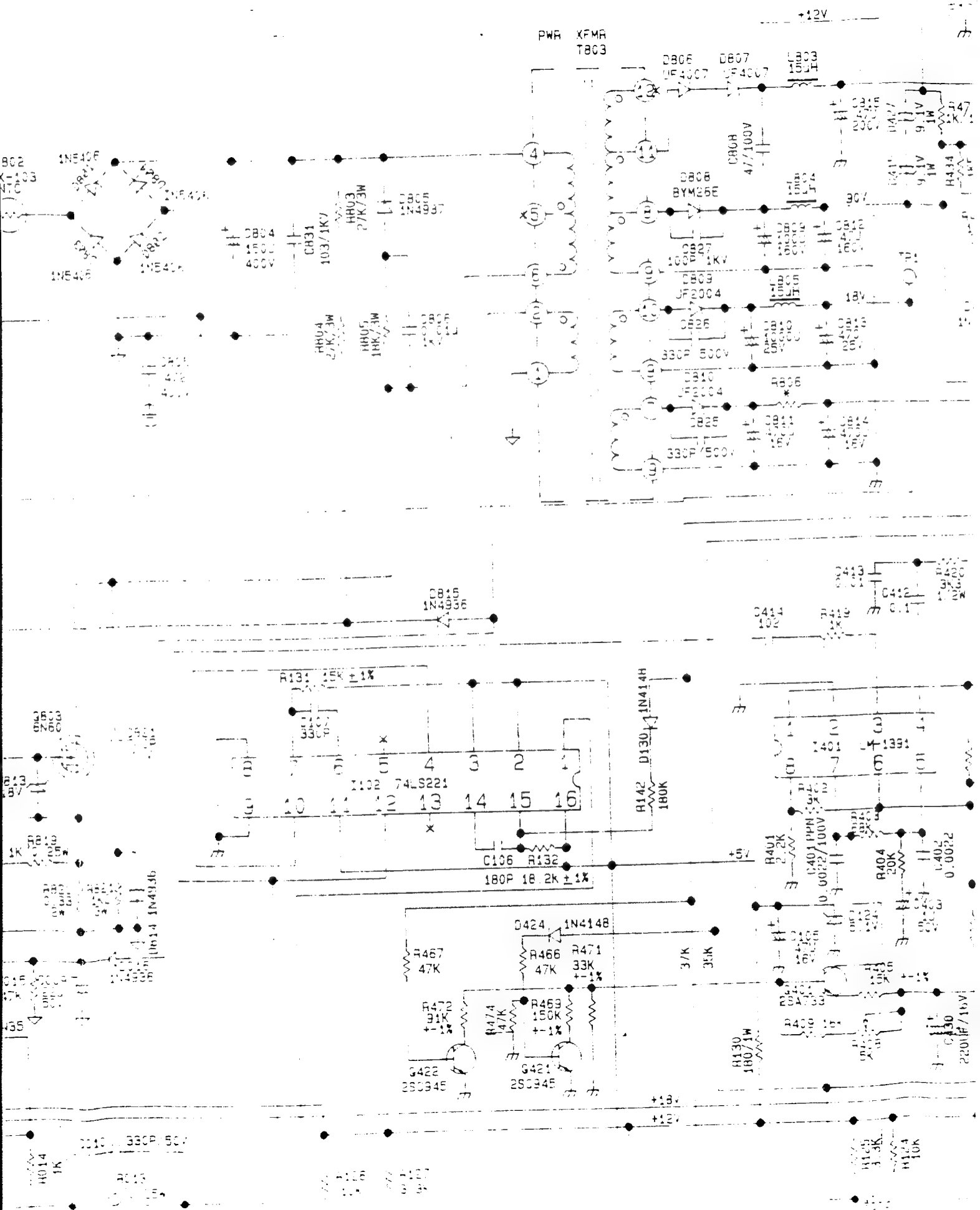
PCB No: 6831120100

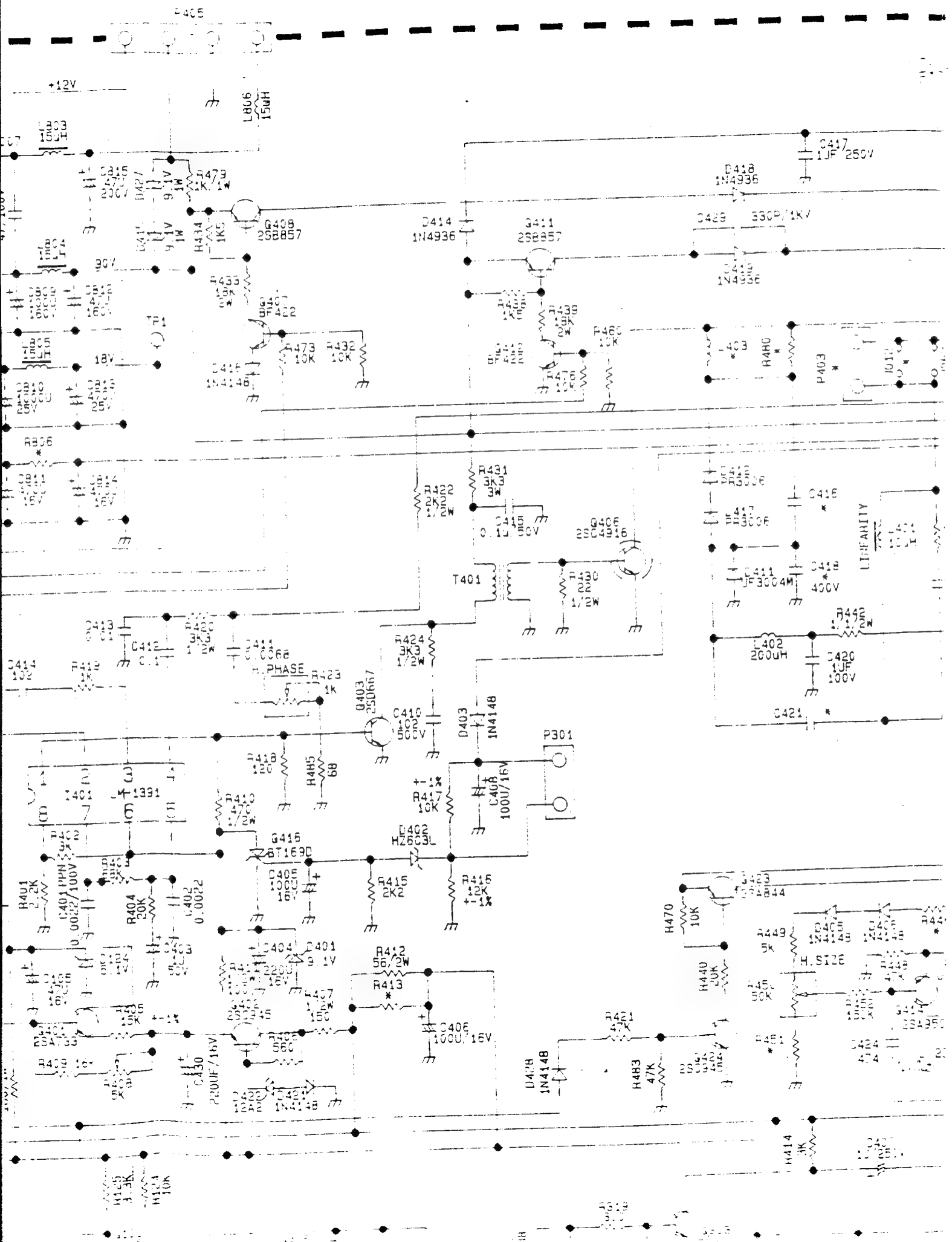
PH01
POWER SWITCH

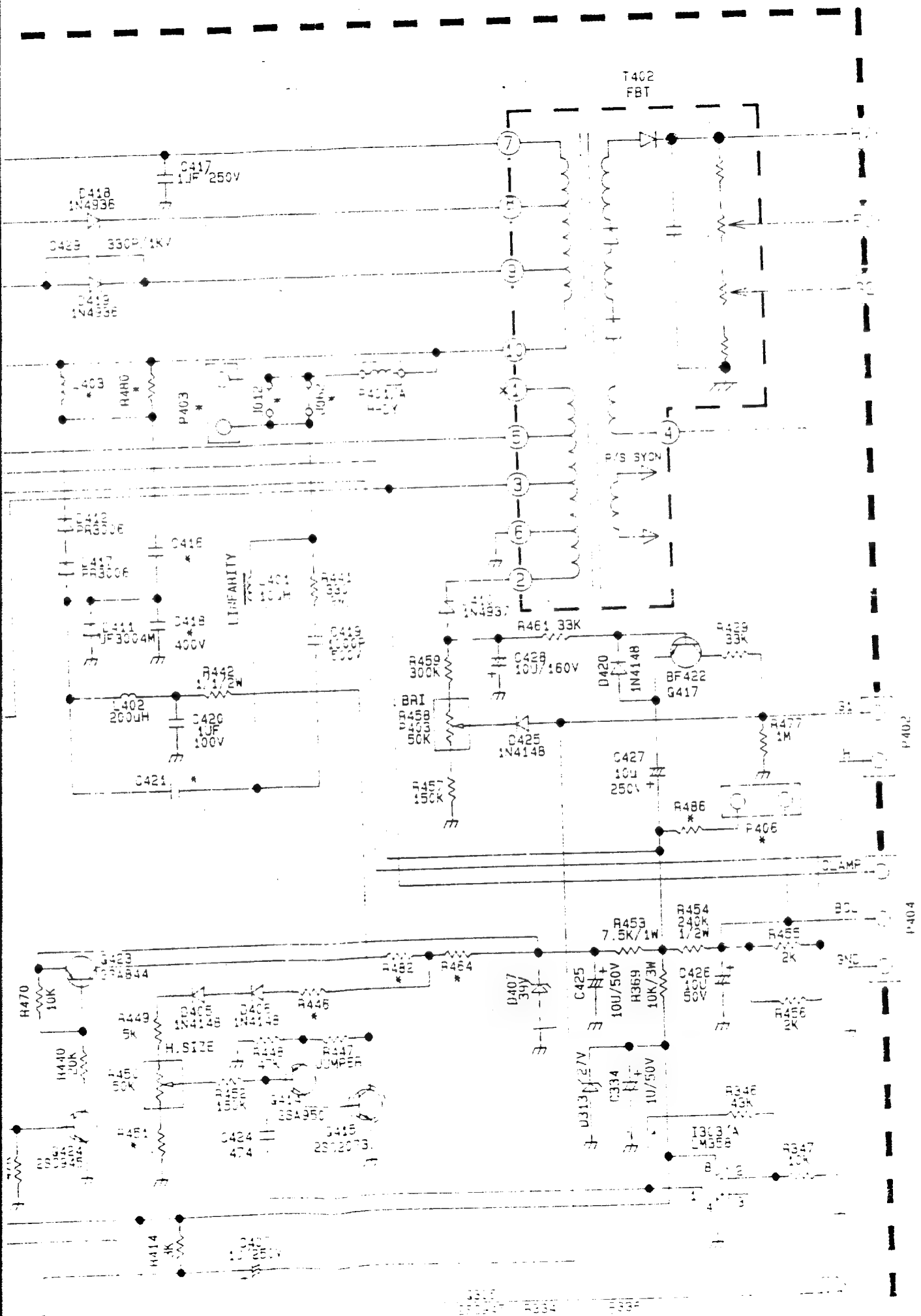


40-3.47







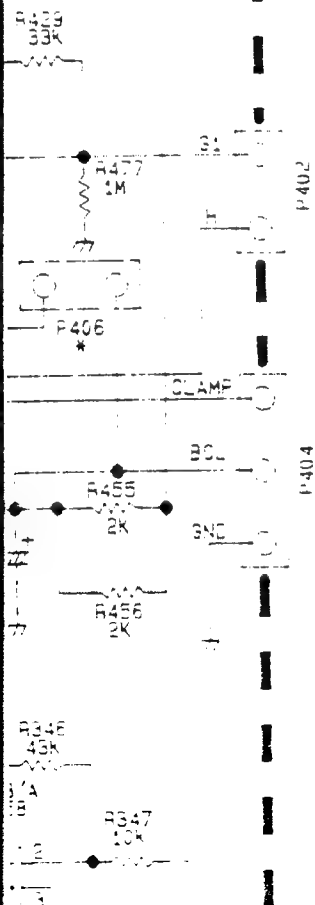
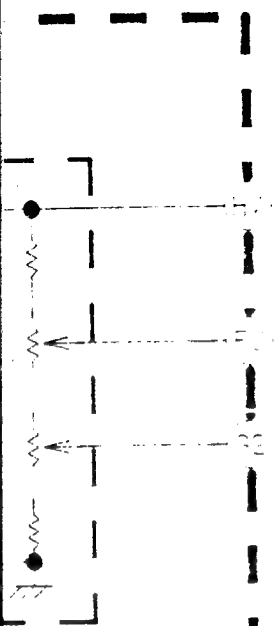


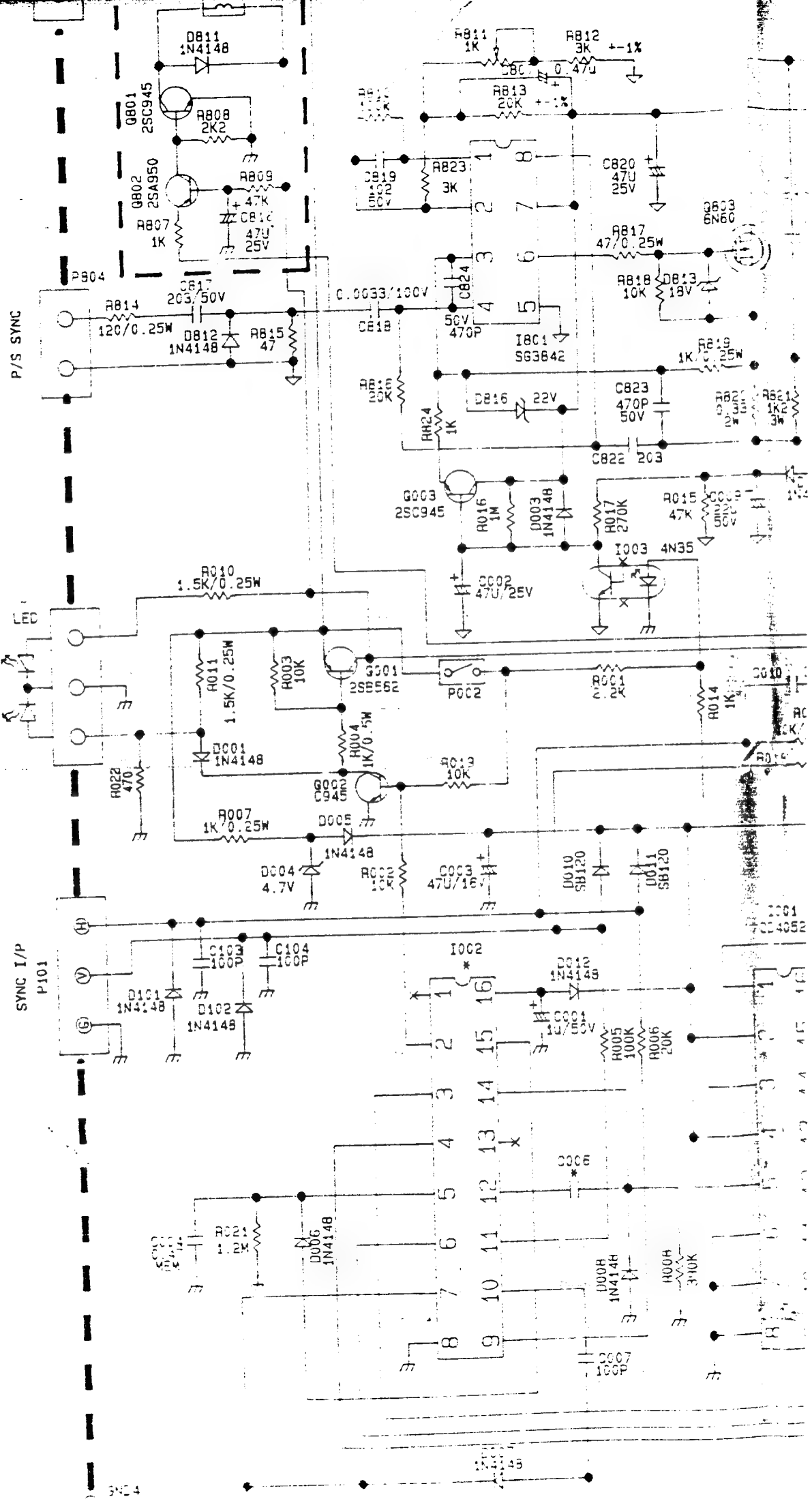
REVISION HISTORY

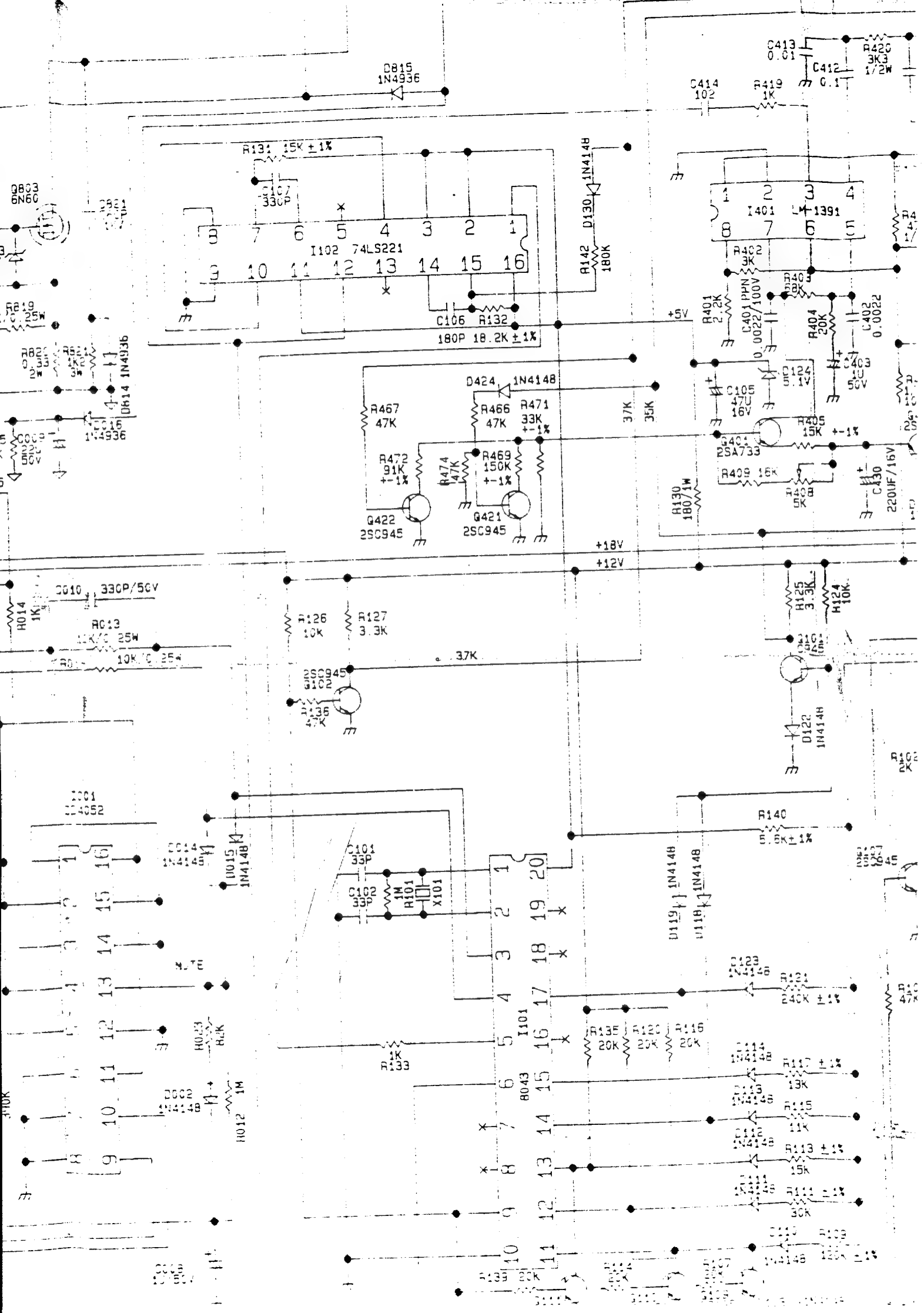
REV.: 04

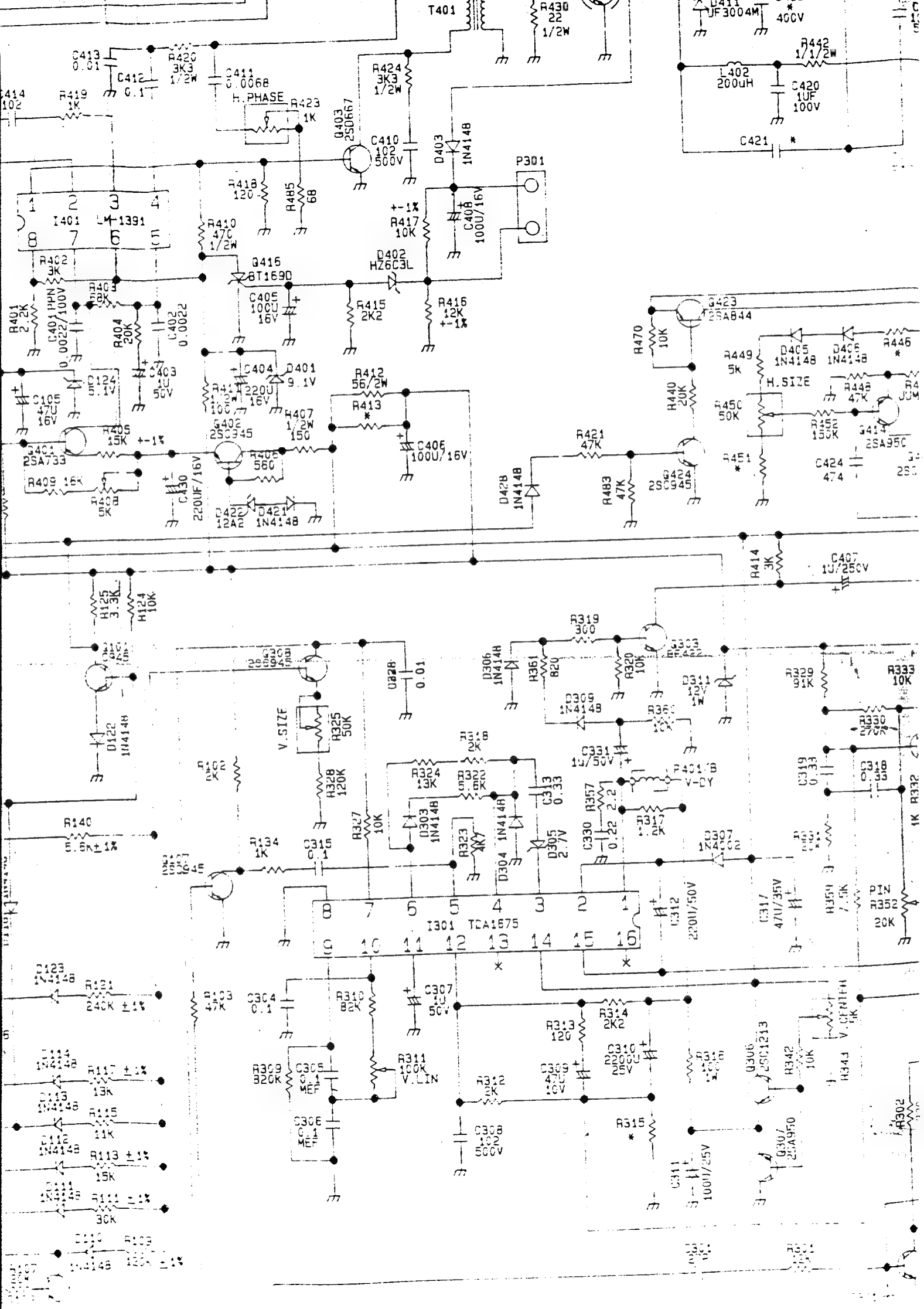
DATE : 01/25/94

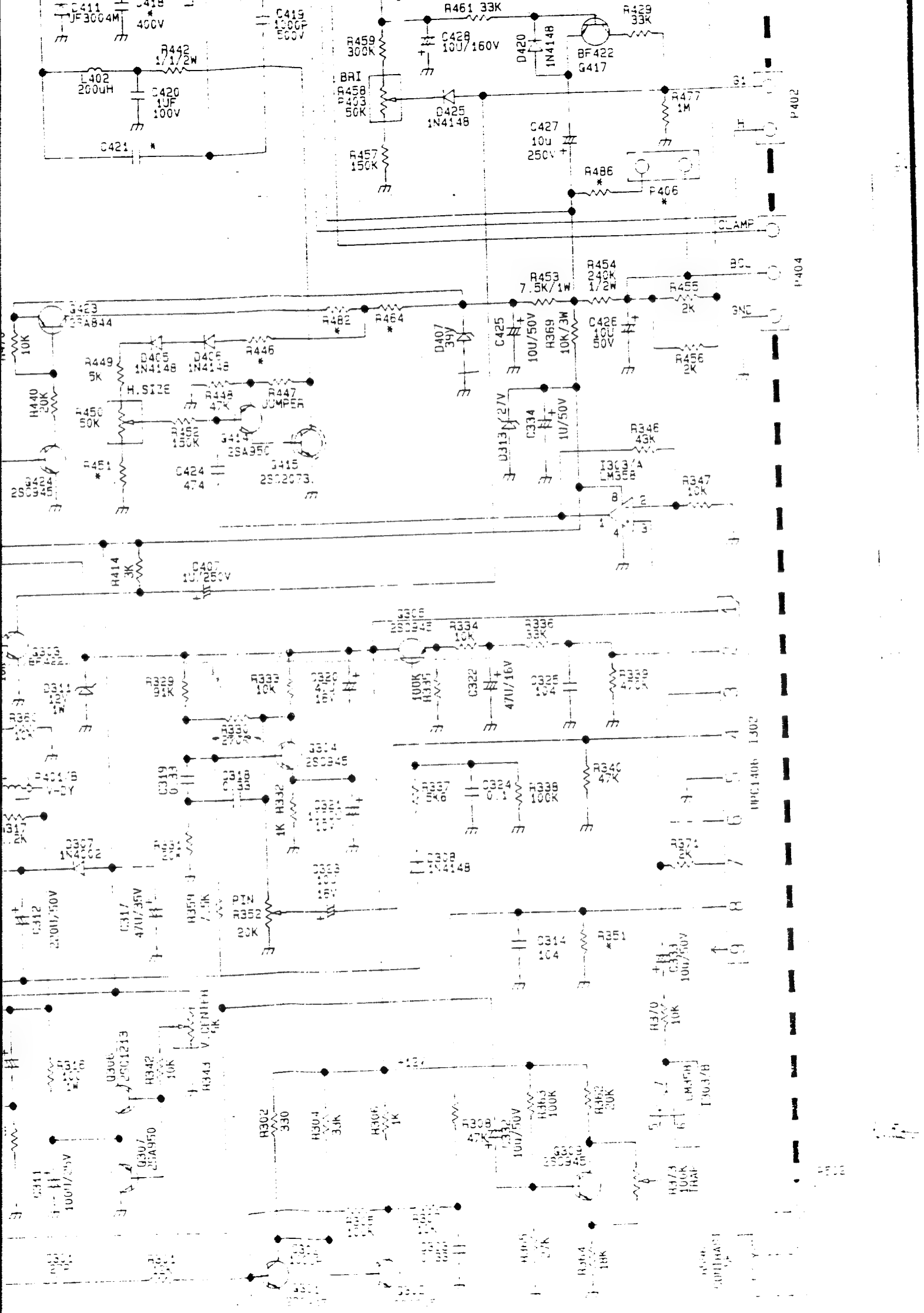
ECN NO :	9000002197	11/24/93
ECN NO :	9000002203	11/26/93
ECN NO :	9000002211	11/29/93
ECN NO :	9000002219	12/03/93
ECN NO :	9000002240	12/13/93
ECN NO :	9000002249	12/16/93
ECN NO :	9000002260	12/22/93
ECN NO :	9000002270	12/28/93
ECN NO :	9000002281	01/05/94
ECN NO :	9000002289	01/11/94
ECN NO :	9000002323	01/25/94

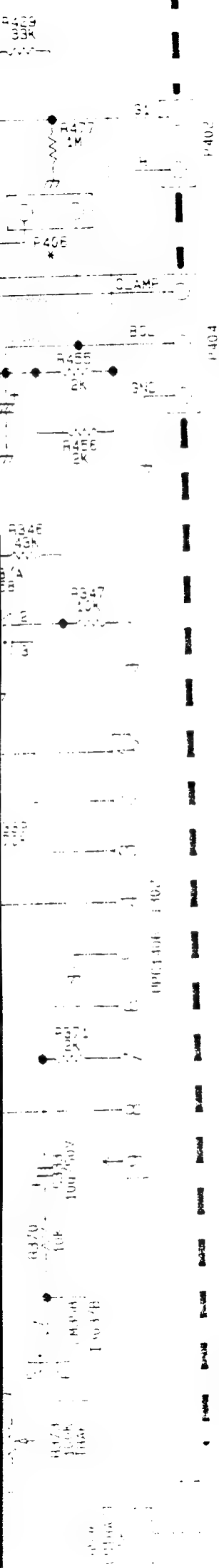


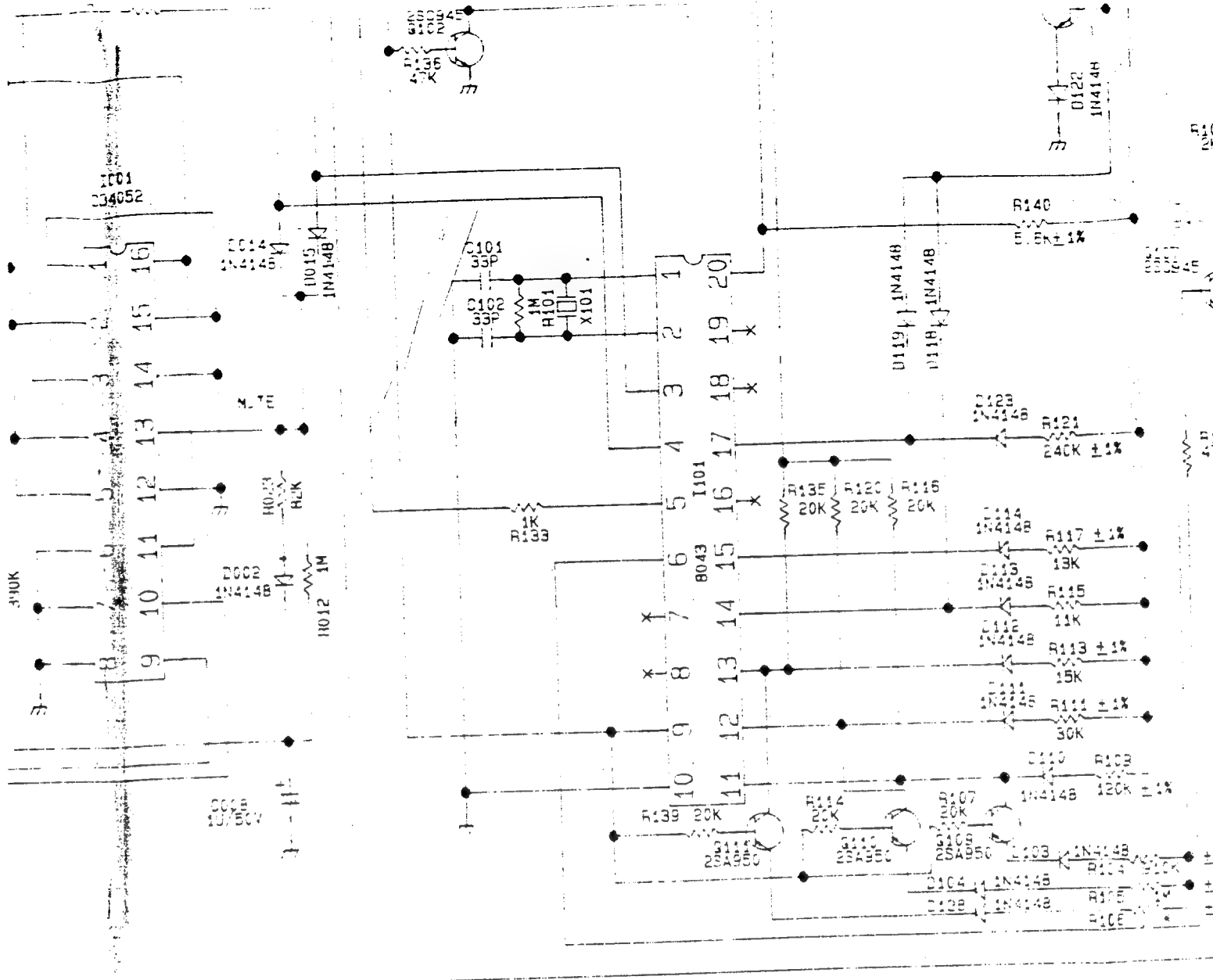












1438LR		1438T				
T (CA)		MATSU (CO)	CPT (CA)	HIT (CB)	CPT ST (CC)	HIT ST (CD)
N BLARE		M34KN228CX05	M34AFA60X03	M34KDD50X02 (J)	M34AEP60X09	M34KDD30X56
AGC8CX18		24K	24K	24K	15K	18K
36K		8.2K	18K	8.2K	5.1K	18K
5.1K		6.2K	6.2K	6.2K	JUMPER	JUMPER
JUMPER		550	550	550	68	1.2K
68		27K	39K	27K	30K	27K
39K		1.0	1.1	1.1	0.75	0.75
1.1		120K	120K	120K	110K	110K
120K		JUMPER	3.2uH	JUMPER	3.2uH	JUMPER
3.2uH		JUMPER	33/2W	JUMPER	33/2W	JUMPER
33/2W		180K	180K	120K	180K	120K
180K		4700P	4700P	4700P	5600P	5600P
4700P		0.01u	0.01u	0.01u	0.012u	0.012u
0.01u		0.75u	0.75u	0.72u	0.75u	0.72u
0.75u		JUMPER	JUMPER	JUMPER	0.33/2W	0.33/2W
JUMPER		47	47	47	56	56
47		2SB562	2SB562	2SB562	2SA966	2SA966
2SB562		103	103	103	102	102
103		-	-	-	103	103
-		1.58M	1.58M	1.58M	1.5M	1.5M
1.58M		-	2.2M	-	2.2M	-
2.2M		-	6E11020090	-	6E11020090	-
6E11020090		-	-	-	-	-



1002	TC4010	CD4010
LOCATION		
000E	82P	220P

	TA
Model:	Ergo
DWG No:	891
PCB No:	683

3
4
5
6
7
8
9

2K

100/50V

LM358
1303/B

100K
FRAP

W596
CONTRAST
5K

F502



E :
'01'94
E :
E :
TE :
TE :
TE :

TAXAN

Model: **Ergovision 400LR**

DWG No: **8911980001**

PCB No: **6831119800**

Rev:02



Document Control

Document Title : Ergovision 400/410 LR Service Manual

Issue Number: 001

Issued By: Dick Menhinick

Date of Issue: 21/04/94

Revisions:



Safety Notices

Please Note:

The following information is provided in the interests of safety.

- 1). This equipment is mains powered (230 Volts AC) and is therefore potentially hazardous once the cover is removed.
- 2). Only trained engineering staff should attempt any work on the unit with the cover removed.
- 3). While servicing the unit, protect the mains supply to the equipment under test and all electrically powered test equipment with a suitably rated Residual Current Circuit Breaker (rccb) unit. These devices are readily available and are designed to remove the mains supply quickly in the event of a serious leakage of current to earth.
- 4). Ensure all test equipment, and the unit under test is adequately earthed.
- 5). Always discharge the CRT before attempting any work on the high voltage power circuits.
- 6). We advise the use of Electrostatic Damage Prevention equipment when servicing electronic equipment containing static sensitive devices.

Table of Contents

SPECIFICATIONS	2
SIGNAL CABLE PIN CONNECTIONS	3
SAFETY PRECAUTIONS AND NOTICES	4
ALIGNMENT AND ADJUSTMENT	6
TIMING CHART	12
TROUBLE SHOOTING CHART	13
BLOCK DIAGRAM	16
SPARE PARTS LIST	17
COMPONENTS LOCATION DIAGRAM .	Inserted

TAXAN Ergovision 400LR Service Manual

SPECIFICATIONS

Application	A typical data display device for graphics & text PC applications
Power Input	75 watts (nominal) AC rated voltage. 90V to 264V AC
Video Signals	Analog: 0.7 Vp-p, RGB positive
Synchronization Signals	Separate Sync: horizontal/vertical, TTL, positive or negative
Synchronization Frequencies	Horizontal: 30 to 38 KHz Vertical: 50/55 to 90 Hz
Signal Connectors	15-pin, D-shell connector
Display Tube	14" 90 degrees, 575R, 0.28mm dot pitch, dot type black matrix, non-glare screen
Display Area	247 x 185 mm (H x V) typical
Display Colors	Infinite
Display Characters	80 char. x 60 rows on a 10 x 10 matrix.
Maximum Resolution	1024 dots x 768 lines
Misconvergence	Center area: ≤ 0.3 mm Corner area: ≤ 0.5 mm
User Controls	Power on/off, vertical size, vertical center, horizontal phase, horizontal width, contrast, brightness
Service Controls	PWB-1201: R-bias (VR910), G-bias (VR940), B-bias (VR970), R-gain (VR502), G-gain (VR532), B-gain (VR562) PWB-1198: power voltage adjust (VR811), pincushion (VR352), horizontal width (VR449), vertical size (VR321), vertical linearity (VR303), horizontal free run frequency (VR408)

TAXAN Ergovision 400LR Service Manual

Environmental Conditions	Operation: 10 to 35°C ambient Storage: 0 to 65°C ambient Humidity: 8% to 80% (non-condensing) Altitude: up to 7000 ft. above sea level
Dimensions	365 x 356 x 390 mm (H x W x D)
Gross Weight	11.9 kgs

SIGNAL CABLE PIN CONNECTIONS

Pin	Signal	Pin	Signal
1	red signal	9	NC
2	green signal	10	GND
3	blue signal	11	GND
4	GND	12	NC
5	GND	13	horizontal synchronization
6	red return	14	vertical synchronization
7	green return	15	NC
8	blue return		

SAFETY PRECAUTIONS AND NOTICES

Safety Precautions

- 1 Observe all cautions and safety related notes located inside the monitor cabinet and on the monitor chassis.
- 2 Operation of the monitor outside its cabinet or with the cover removed involves the risk of shock from the monitor power supply. Repair work on the monitor should not be attempted by anyone who is not thoroughly familiar with all necessary safety precautions and procedures for working on high voltage equipment.
- 3 Do not install, remove, or handle the picture tube in any manner unless shatter-proof goggles are worn. People not so equipped should be kept at a distance during handling of the picture tube. Keep the picture tube away from the body during handling.
- 4 The picture tube is constructed to limit X-radiation to 0.5mR/HR at 300 microamperes anode current. For continued protection, use the recommended replacement tube only, and adjust the voltages so that the designated maximum rating at the anode will not be exceeded.

Product Safety Notice

Many electrical and mechanical parts in this chassis have been specially inspected for safety, and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage etc. Before replacing any of these components, read the spare parts list at the end of this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as those specified in the spare parts list may result in shock, fire, X-radiation or other hazards.

TAXAN Ergovision 400LR Service Manual

Service Notes

- 1 When replacing parts or circuit boards, clamp the lead wires around the terminals before soldering.
- 2 When replacing a high wattage resistor (>1W metal oxide film resistor) in the circuit board, keep the resistor about 1 cm(1/2") away from the circuit board.
- 3 Keep wires away from high voltage or high temperature components.
- 4 Keep wires in their original positions so as to minimize interference.

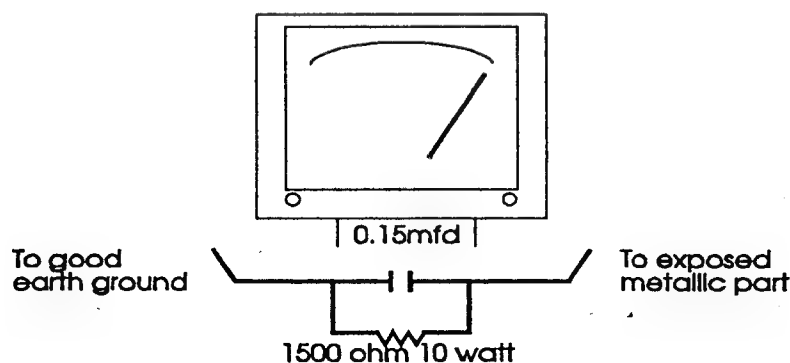
Safety Test

Before returning a serviced monitor to customer, a thorough safety test must be performed to verify that the monitor is safe to operate without danger of shock. Always perform the AC leakage current check on the exposed metallic parts, such as screw heads, as follows:

- 1 Plug the AC line cord directly into a rated AC outlet. Do not use a line isolation transformer during this check.
- 2 Use an AC voltmeter having at least 5000 ohms per volt sensitivity as follows:

Connect a 1500 ohms 10 watt resistor, paralleled by a 0.15mfd, AC type capacitor between a known good earth ground (such as water pipe or conduit etc.) and the exposed metallic part simultaneously. Measure the AC voltage across the combination of 1500 ohms resistor and 0.15mfd capacitor.

- 3 Reverse the AC plug at the AC outlet and repeat the steps for AC voltage measurements for each exposed metallic part.
- 4 Voltage measure must not exceed 0.3 volts RMS. This corresponds to 0.2 milli-amps AC. Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.



TAXAN *Ergovision 400LR Service Manual*

ALIGNMENT AND ADJUSTMENT

Adjustment Conditions

Power supply: Apply AC115V

Warm-up time: The monitor should be powered on for at least 15 minutes before any adjustments are made, except for convergence, which 30 minutes are required.

Signal input:

1. Video RGB Analog, 0.7Vp-p, positive
2. Synchronization Horizontal and vertical separate, positive or negative
3. All adjustments should be made using a signal of FH=31.468 KHz, unless otherwise defined.

Adjustment Equipment

- Volt-ohm-A meter (Sanwa FD-750C or equivalent)
- 30KV high voltage probe (HP34111A)
- Oscilloscope (TEK2235 or equivalent)
- Minolta Color Analyzer II
- Signal generator (IBM PC with proper display cards or Chroma 2000)
- Screwdriver

TAXAN Ergovision 400LR Service Manual

Switching Power Supply - Regulator Adjustment

The regulated B+ control has been pre-set in the factory and needs no adjustment. However, if any repairs are made on the power supply section, the following readjustment procedures are recommended.

- 1 Allow the monitor to warm-up for about 15 minutes.
- 2 Apply the VGA (31.468KHz) signal to the monitor.
- 3 Connect a DC meter to D809 cathode end (on the main PCB), and adjust VR811 for 18.6+/- 0.1V DC.
- 4 If a fuse is broken during adjustment, remember to replace it with the exact same type of fuse.

Alignment Procedures

A Synchronization Adjustment

Input signal:

- 1 Short pin 1 and 2 of P002 to override the power saving function with a jumper switch.
- 2 Connect the probe to D410 anode and adjust VR408 to obtain the horizontal frequency to 30.6 KHz +/- 100 Hz.
- 3 Remove the jumper switch on P002, pin 1 and 2.

B Picture Size Adjustment

Input Signal: Cross Hatch Pattern

Set horizontal width at 247mm on 640x480 mode / 60Hz by adjusting VR450.

TAXAN Ergovision 400LR Service Manual

Set Vertical size at 185mm on 640x480 / 60Hz mode by adjusting VR325.

C Vertical Linearity Adjustment (VR311)

Input Signal: 640x480/60Hz, crosshatch pattern

Adjust VR311 for same height on the top and bottom blocks.

D Screen And White Balance Adjustment

Input Signal: Cross Hatch Pattern

Adjust VR352 so that the pincushion distortion is minimum

Drive VRs: VR502, VR532, VR562

Bias VRs: VR910, VR940, VR970

Input Signal: Full White Pattern

1a Set Brightness & Contrast to maximum and G2 voltage to have luminance 1FL.

1b First, adjust VR940 to its center position

Second, adjust VR970 so that $Y=0.311$

Then, adjust VR910 so that $X=0.281$

1c Adjust G2 voltage to have luminance to 0.5FL

Input signal: 50mm x 50mm white block pattern

2a Set Brightness at center click position & Contrast to maximum

2b Adjust VR532 for luminance to 53FL

TAXAN Ergovision 400LR Service Manual

- 3a Adjust contrast to 8FL
- 3b First adjust VR562 so that $Y=0.311$
Then adjust VR502 so that $X=0.281$
- 4a Repeat steps 2b to 3b until the best white balance is obtained

E Focus Adjustment

Input signal: Character "e" pattern

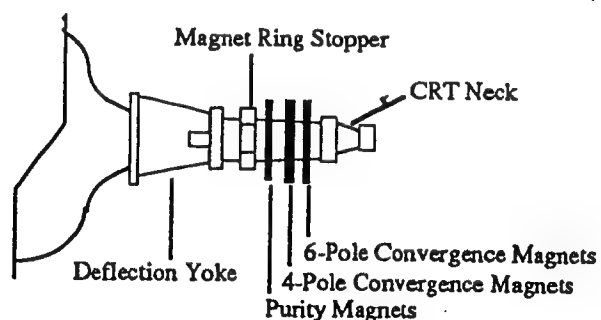
- 1 Set Brightness & Contrast for a normal display.
- 2 Adjust the focus control at the high voltage resistor block to obtain the best focus over the entire display area.

F Static Convergence Adjustment

Note The monitor should be operated for at least 30 minutes before any convergence adjustments are made.

Input Signal: Cross Hatch Pattern

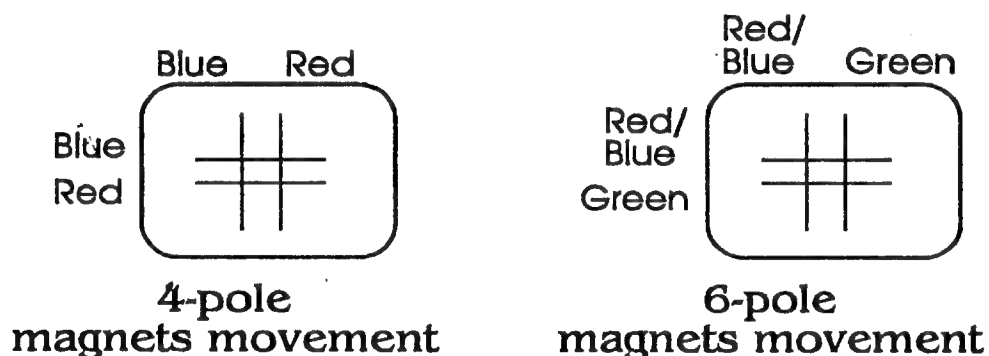
- 1 Set Brightness & Contrast so that a well-defined pattern is obtained.
- 2 Ensure that the convergence magnets on the CRT are in the correct position.



TAXAN Ergovision 400LR Service Manual

- 3 Turn the 2 tabs of the 4-pole magnets independently to adjust their angles. Align the red & blue vertical lines at the center of the screen.
- 4 Turn the 2 tabs of the 4-pole magnets simultaneously to keep their angles constant. Align the red & blue horizontal lines at the center of the screen.
- 5 Turn the 2 tabs of the 6-pole magnets independently to superimpose the red or blue vertical line on the green one.
- 6 Turn the 2 tabs of the 6-pole magnets simultaneously to superimpose the red or blue horizontal line on the green one.
- 7 Repeat steps 3, 4, 5 & 6 until the best convergence is obtained.

Note The 4-pole magnets & the 6-pole magnets interact, making dot movements complex.



G Degaussing

Degaussing is required when poor color purity appears on the screen. This monitor uses an automatic degaussing circuit that is activated at power on. Automatic degaussing will be fully functional within 15 minutes.

The degaussing effect is confined to the picture tube since the coils are mounted at the back of the tube. Should any part of the chassis or cabinet becoming magnetized, it will be necessary to degauss the affected area with a manual degaussing coil.

Manual Degaussing

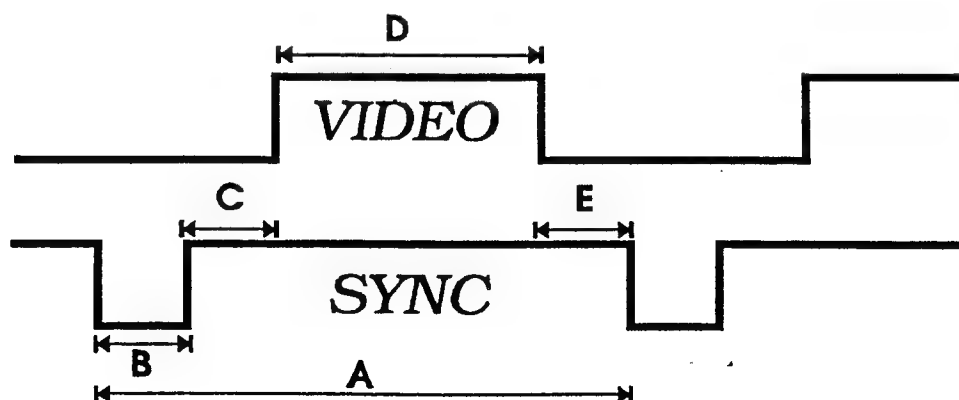
- 1 Apply line voltage to the degaussing coil and move it in a rotary motion over the front, sides , and top of the monitor. The coil should be kept away from the rear of the monitor to avoid damaging the magnetic neck components.
- 2 Slowly rotate and move the coil away from the monitor to about 6 feet beyond the point where no effect on the CRT will be noticeable.

For proper degaussing, it is essential that the field be gradually reduced by moving the coil slowly away from the monitor. The degaussing coil must never be shut off or disconnected while near the monitor, as this would introduce a strong field instead of canceling the effect of the stray fields.

TAXAN Ergovision 400LR Service Manual

TIMING CHART

	Mode 1	Mode 2	Mode 3	Mode 4	Mode 5
Hori. Dots	640	720	640	800	1024
Vert. Lines	350	400	480	600	768
Hori. Frequency (KHz)	31.47	31.47	31.47	35.16	35.52
Sync. Polarity	POS	NEG	NEG	POS/ NEG	POS
A us	31.78	31.78	31.78	28.44	28.1
B us	3.81	3.81	3.81	2	3.91
C us	1.907	1.907	1.907	3.556	1.25
D us	25.42	25.42	25.42	22.22	22.81
E us	0.636	0.636	59.95	0.667	0.178
Vert. Frequency (Hz)	70.08	70.08	72.19	56.25	86.96
Sync. Polarity	POS	POS	POS	POS/ NEG	POS
A ms	14.27	14.27	16.68	17.78	11.5
B us	0.064	0.064	0.064	0.057	0.112
C us	1.87	1.08	1.02	0.626	0.577/ 0.653
D ms	11.12	12.71	15.25	17.07	10.82
E ms	1.21	0.413	0.35	0.053	14μ S/O

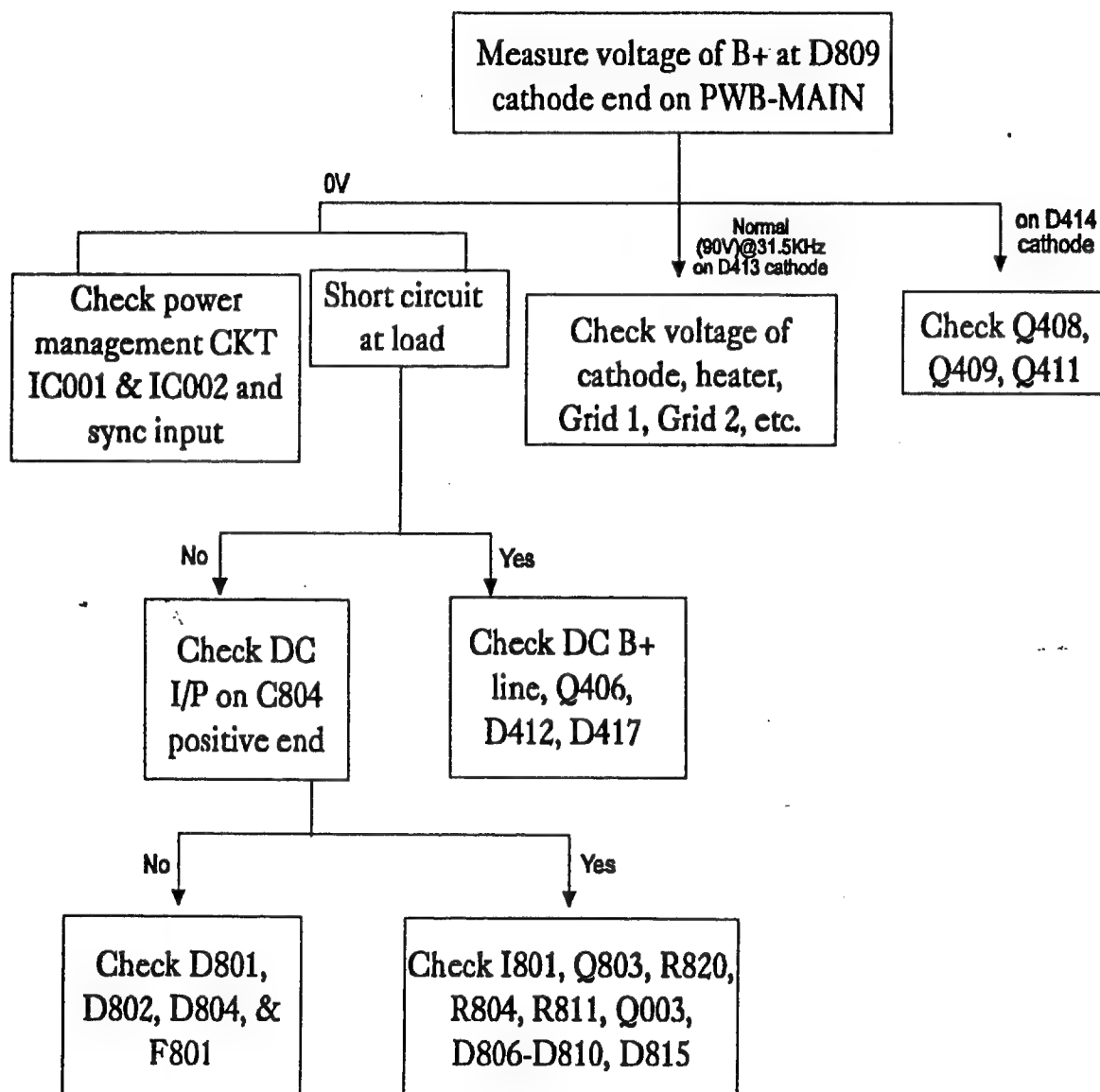


TAXAN Ergovision 400LR Service Manual

	Mode 6	Mode 7	Mode 8	Mode 9
Hori. Dots	640	800	640	720
Vert. Lines	480	600	350	400
Hori. Frequency (KHz)	37.86	37.88	37.86	37.86
Sync. Polarity	NEG	POS	POS	NEG
A us	26.413	26.4	26.413	26.413
B us	1.27	3.2	1.27	1.27
C us	4.06	2.2	4.063	4.063
D us	20.317	20	20.317	20.317
E us	0.76	1	0.762	0.762
Vert. Frequency (Hz)	72.81	60.32	84.14	84.14
Sync. Polarity	NEG	POS	NEG	POS
A ms	13.735	16.58	11.886	11.886
B us	0.079	0.106	0.079	0.097
C us	0.74	0.607	1.638	1.004
D ms	12.678	15.84	9.244	10.565
E ms	0.238	0.026	0.924	0.238

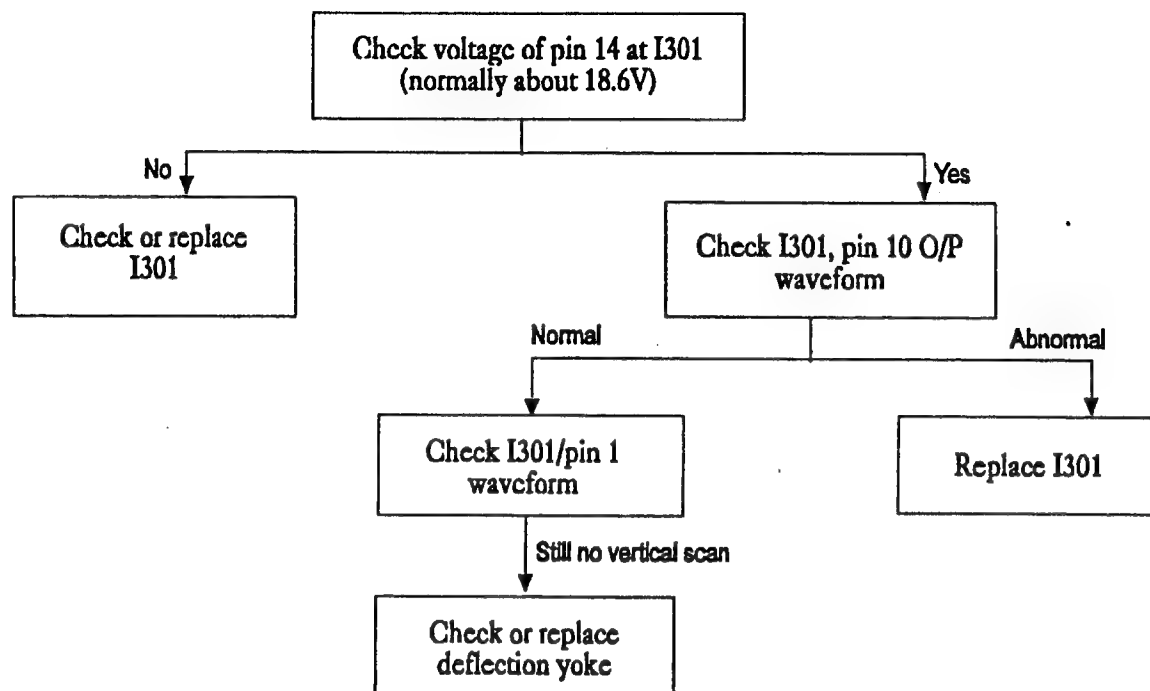
TROUBLE SHOOTING CHART

No Raster

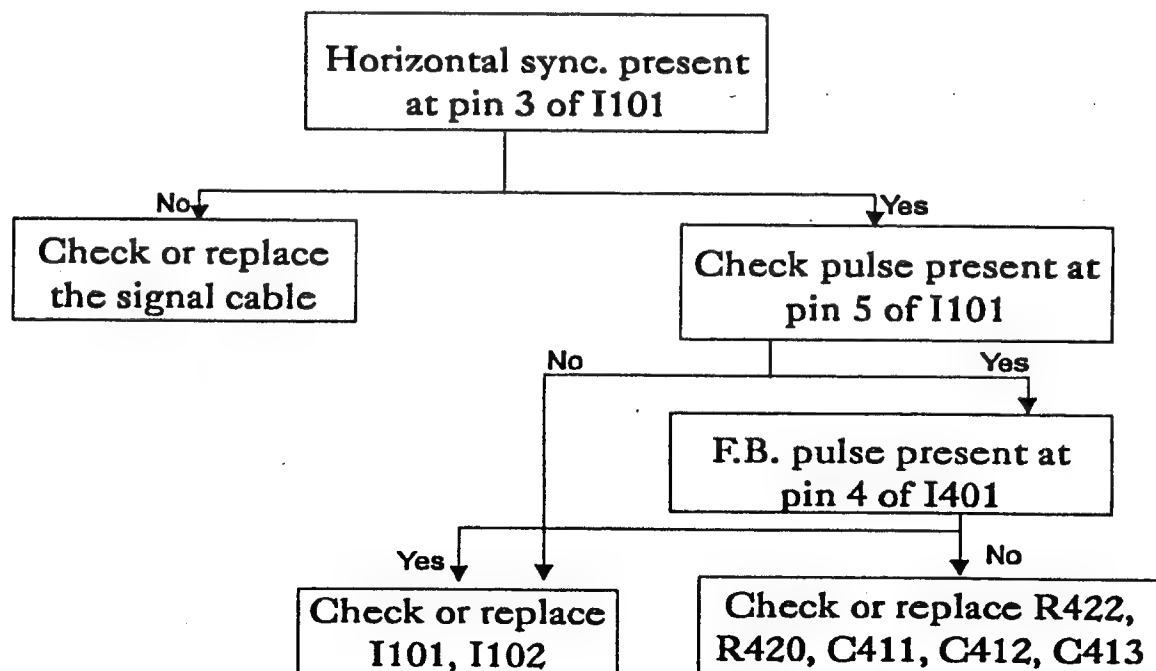


TAXAN Ergovision 400LR Service Manual

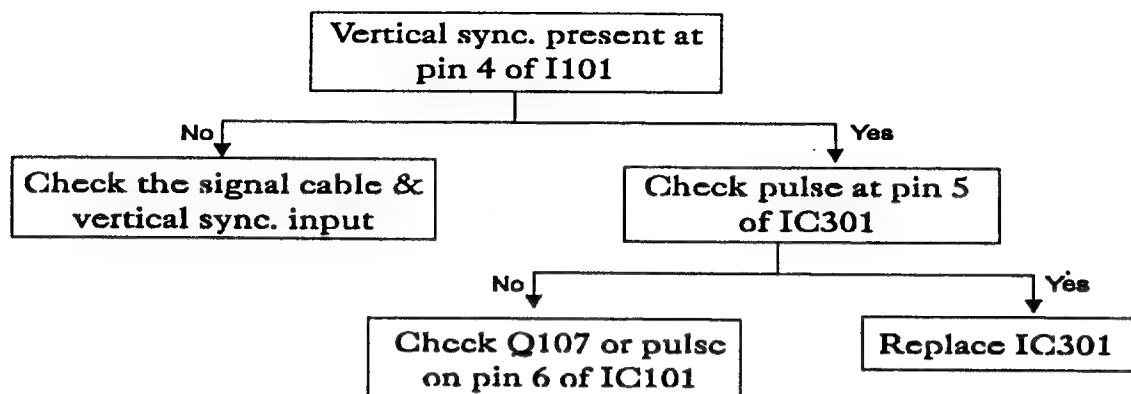
No Vertical Scan (Raster is one horizontal line)



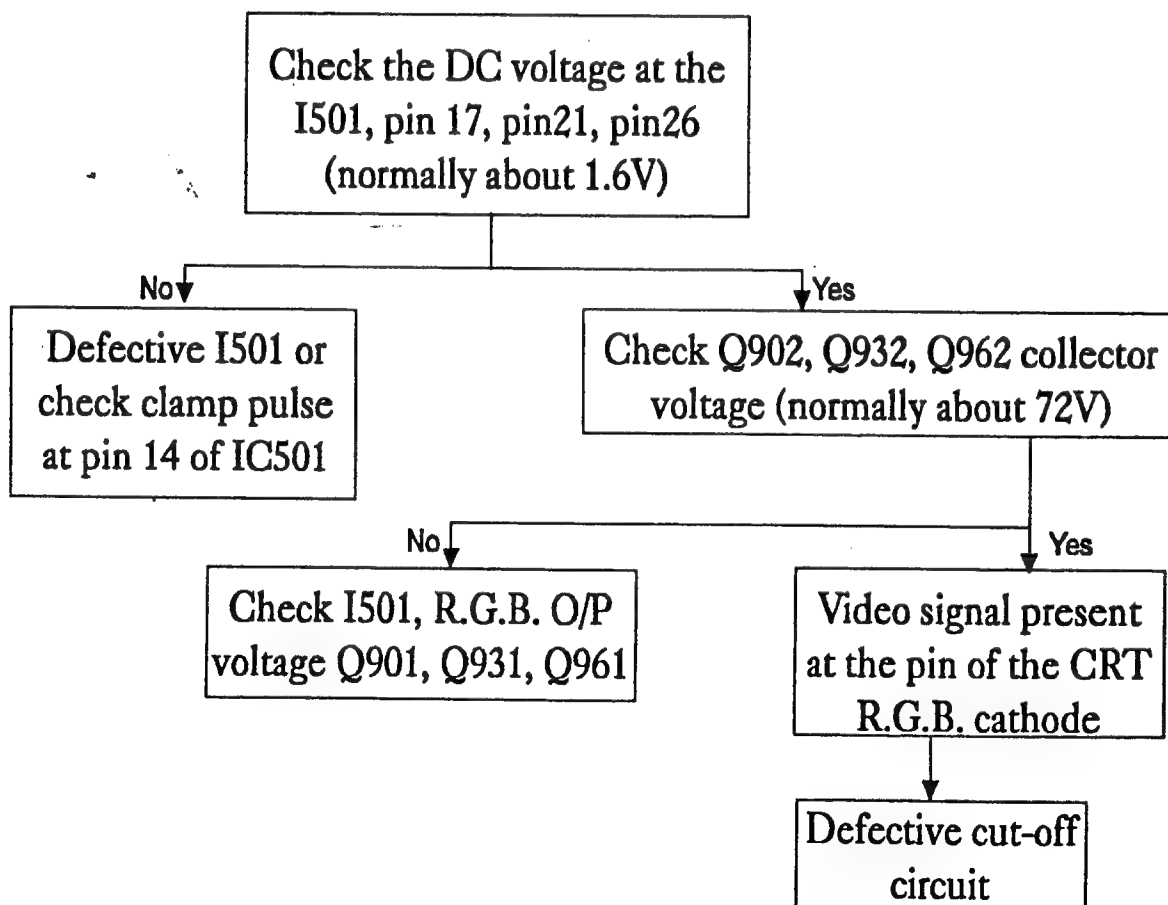
Out of Horizontal Synchronization



Out of Vertical Synchronization

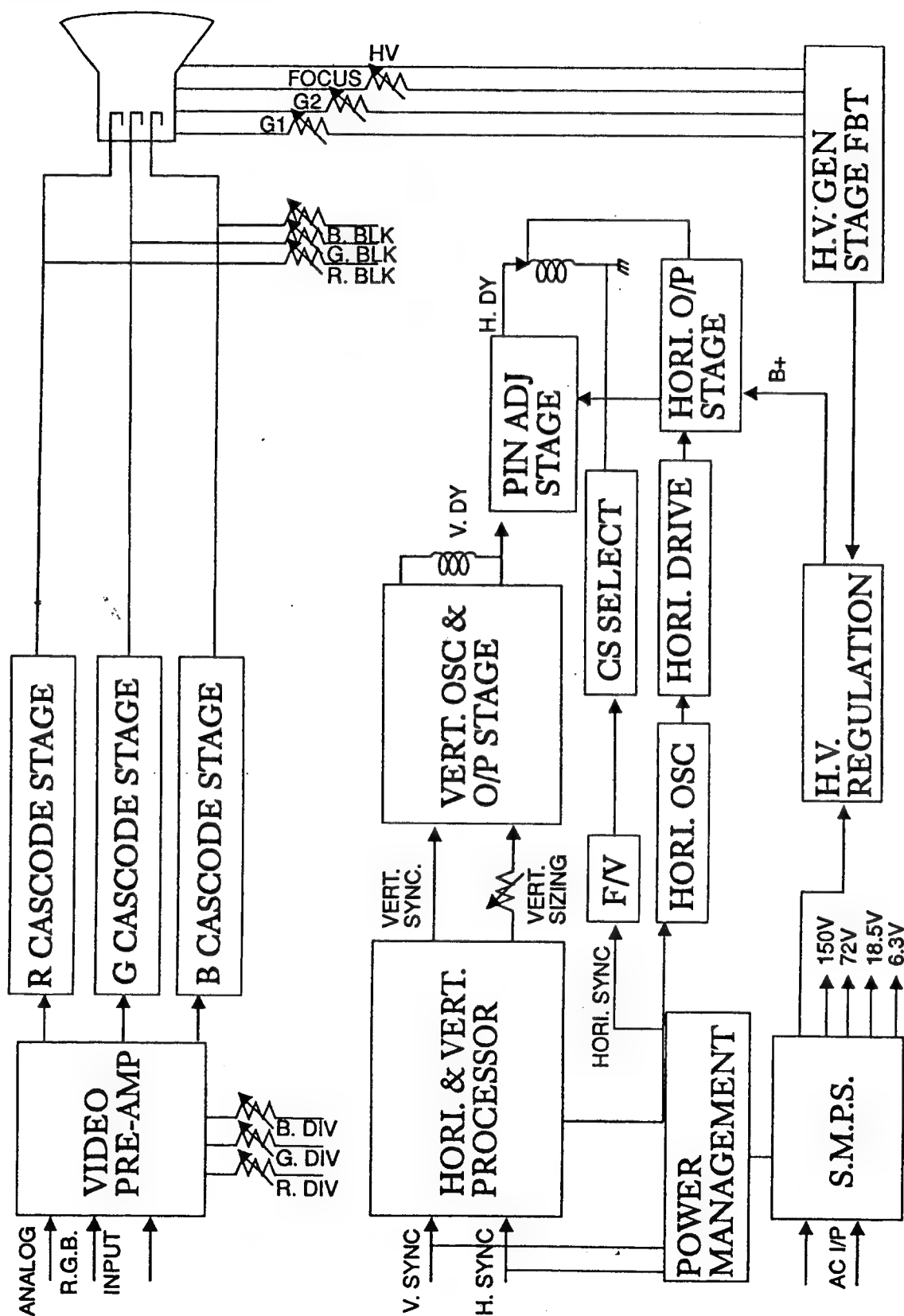


R. G. B. Video AMP Abnormal



TAXAN Ergovision 400LR Service Manual

BLOCK DIAGRAM



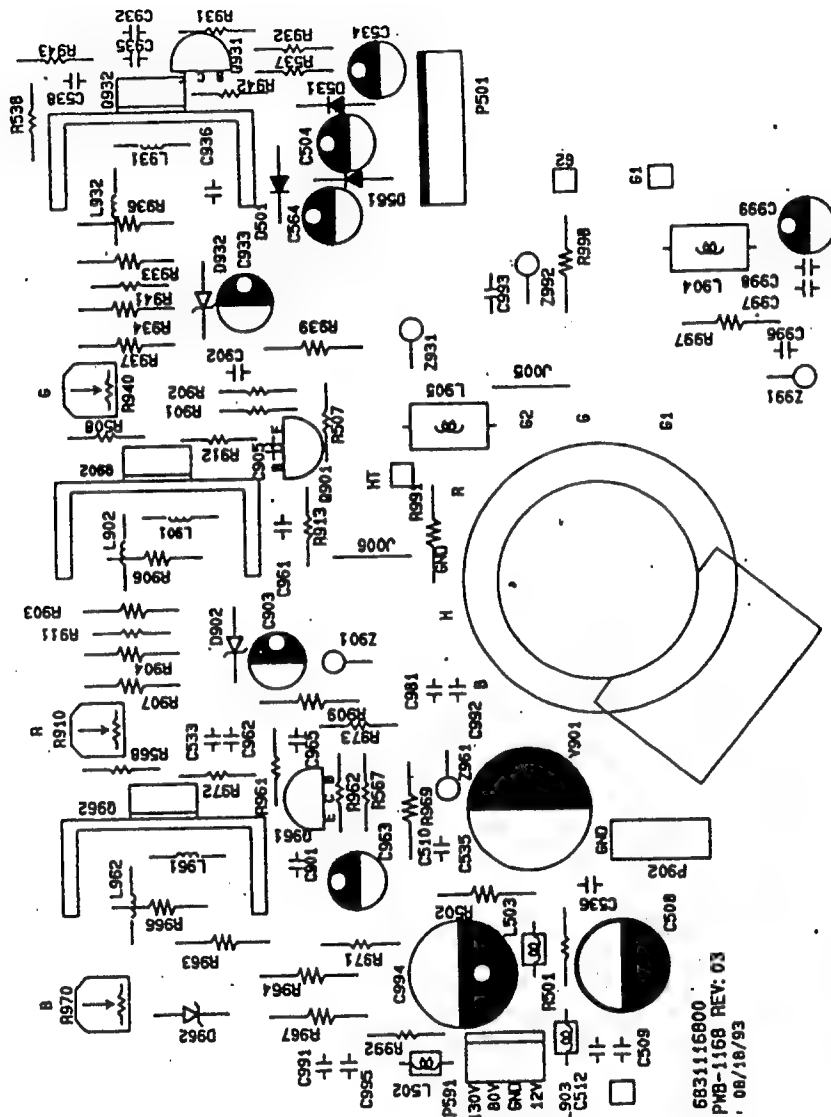
TAXAN Ergovision 400LR Service Manual

SPARE PARTS LIST

Location	Part Number	Description
Q406	6421000330	TR NPN 2SC4916 TOSHIBA
Q408, Q409, Q411	6424000600	TR PNP 2SB857C HITACHI
Q413	6426000280	FET N-CHNL IRF630 SGS-THOMAS SAMSUNG
Q803	6426001200	FET N-CHNL IRF730 TO-220F SGS-THOMAS SAMSUNG
D809, D810	6412004117	DIODE UF2004 T52 2A/400V 50nS LITE-ON
D808	6412012107	DIODE UF2005 T52 2A/600V 75nS LITE-ON
D806	6412001904	DIODE UF4007 T26 1A/1KV 75nS LITE-ON
D412, D417	6412004817	DIODE PR3006 T52 3A/800V 500nS LITE-ON
D411	6412002017	DIODE UF3004M T52 3A/400V 50nS LITE-ON
I501	6442000502 6442000500	IC 28P MM1203XD PLASTIC DIP MITSUMI IC 28P LINEAR LM1203 VIDEO NS
I801	6442002500	IC 8P LINEAR SG3842M SGS-THOMAS
I003	6442001201	IC 6P LINEAR 4N35 TELEFUNKEN
I301	6442001400	IC 15P LINEAR TPA1675A SGS-THOMAS
I401	6442000300	IC 8P LINEAR MC1391P MOTOROLLA
I101	6442009200	IC 20P WT8043N20 (ASIC) DIP WELTREND
F801	6851004050	FUSE TIME LAG 4A/250V SEMKO BEL



6831116800
PWB-1168 REV: 03
08/18/93



8888 ▲ 27 H

Table of Contents

SPECIFICATIONS	2
SIGNAL CABLE PIN CONNECTIONS	3
SAFETY PRECAUTIONS AND NOTICES	4
ALIGNMENT AND ADJUSTMENT	6
TIMING CHART	12
TROUBLE SHOOTING CHART	13
BLOCK DIAGRAM	16
SPARE PARTS LIST	17
COMPONENTS LOCATION DIAGRAM .	Inserted

TAXAN Ergovision 410LR Service Manual

SPECIFICATIONS

Application	A typical data display device for graphics & text PC applications
Power Input	75 watts (nominal) AC rated voltage. 90V to 264V AC
Video Signals	Analog: 0.7 Vp-p, RGB positive
Synchronization Signals	Separate Sync: horizontal/vertical, TTL, positive or negative
Synchronization Frequencies	Horizontal: 30 to 48 KHz Vertical: 50/55 to 90 Hz
Signal Connectors	15-pin, D-shell connector
Display Tube	14" 90 degrees, 575R, 0.28mm dot pitch, dot type black matrix, non-glare screen
Display Area	247 x 185 mm (H x V) typical
Display Colors	Infinite
Display Characters	80 char. x 60 rows on a 10 x 10 matrix.
Maximum Resolution	1024 dots x 768 lines
Misconvergence	Center area: ≤ 0.3 mm Corner area: ≤ 0.4 mm
User Controls	Power on/off, vertical size, vertical center, horizontal phase, horizontal width, contrast, brightness
Service Controls	PWB-1201: R-bias (VR910), G-bias (VR940), B-bias (VR970), R-gain (VR502), G-gain (VR532), B-gain (VR562) PWB-1198: power voltage adjust (VR811), pincushion (VR352), horizontal width (VR449), vertical size (VR321), vertical linearity (VR303), horizontal free run frequency (VR408)

TAXAN *Ergovision 410LR Service Manual*

Environmental Conditions	Operation: 10 to 35°C ambient Storage: 0 to 65°C ambient Humidity: 8% to 80% (non-condensing) Altitude: up to 7000 ft. above sea level
Dimensions	365 x 356 x 390 mm (H x W x D)
Gross Weight	11.9 kgs

SIGNAL CABLE PIN CONNECTIONS

Pin	Signal	Pin	Signal
1	red signal	9	NC
2	green signal	10	GND
3	blue signal	11	GND
4	GND	12	NC
5	GND	13	horizontal synchronization
6	red return	14	vertical synchronization
7	green return	15	NC
8	blue return		

SAFETY PRECAUTIONS AND NOTICES

Safety Precautions

- 1 Observe all cautions and safety related notes located inside the monitor cabinet and on the monitor chassis.
- 2 Operation of the monitor outside its cabinet or with the cover removed involves the risk of shock from the monitor power supply. Repair work on the monitor should not be attempted by anyone who is not thoroughly familiar with all necessary safety precautions and procedures for working on high voltage equipment.
- 3 Do not install, remove, or handle the picture tube in any manner unless shatter-proof goggles are worn. People not so equipped should be kept at a distance during handling of the picture tube. Keep the picture tube away from the body during handling.
- 4 The picture tube is constructed to limit X-radiation to 0.5mR/HR at 300 microamperes anode current. For continued protection, use the recommended replacement tube only, and adjust the voltages so that the designated maximum rating at the anode will not be exceeded.

Product Safety Notice

Many electrical and mechanical parts in this chassis have been specially inspected for safety, and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage etc. Before replacing any of these components, read the spare parts list at the end of this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as those specified in the spare parts list may result in shock, fire, X-radiation or other hazards.

TAXAN Ergovision 410LR Service Manual

Service Notes

- 1 When replacing parts or circuit boards, clamp the lead wires around the terminals before soldering.
- 2 When replacing a high wattage resistor ($>1W$ metal oxide film resistor) in the circuit board, keep the resistor about 1 cm($1/2''$) away from the circuit board.
- 3 Keep wires away from high voltage or high temperature components.
- 4 Keep wires in their original positions so as to minimize interference.

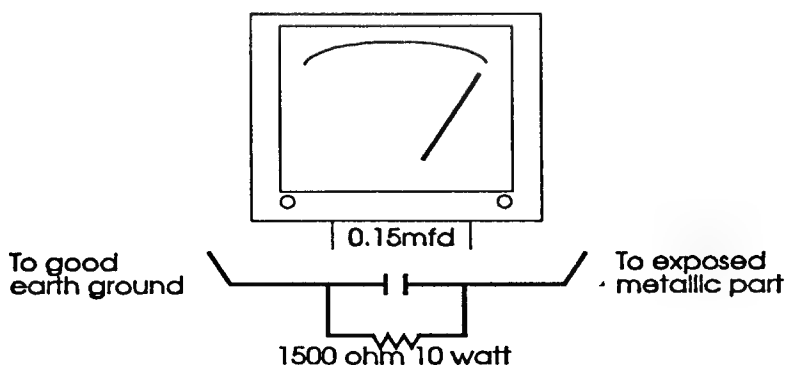
Safety Test

Before returning a serviced monitor to customer, a thorough safety test must be performed to verify that the monitor is safe to operate without danger of shock. Always perform the AC leakage current check on the exposed metallic parts, such as screw heads, as follows:

- 1 Plug the AC line cord directly into a rated AC outlet. Do not use a line isolation transformer during this check.
- 2 Use an AC voltmeter having at least 5000 ohms per volt sensitivity as follows:

Connect a 1500 ohms 10 watt resistor, paralleled by a 0.15mfd, AC type capacitor between a known good earth ground (such as water pipe or conduit etc.) and the exposed metallic part simultaneously. Measure the AC voltage across the combination of 1500 ohms resistor and 0.15mfd capacitor.

- 3 Reverse the AC plug at the AC outlet and repeat the steps for AC voltage measurements for each exposed metallic part.
- 4 Voltage measure must not exceed 0.3 volts RMS. This corresponds to 0.2 milli-amps AC. Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.



TAXAN *Ergovision 410LR Service Manual*

ALIGNMENT AND ADJUSTMENT

Adjustment Conditions

Power supply: Apply AC115V

Warm-up time: The monitor should be powered on for at least 15 minutes before any adjustments are made, except for convergence, which 30 minutes are required.

Signal input:

1. Video RGB Analog, 0.7Vp-p, positive
2. Synchronization Horizontal and vertical separate, positive or negative
3. All adjustments should be made using a signal of FH=31.468 KHz, unless otherwise defined.

Adjustment Equipment

- Volt-ohm-A meter (Sanwa FD-750C or equivalent)
- 30KV high voltage probe (HP34111A)
- Oscilloscope (TEK2235 or equivalent)
- Minolta Color Analyzer II
- Signal generator (IBM PC with proper display cards or Chroma 2000)
- Screwdriver

TAXAN Ergovision 410LR Service Manual

Switching Power Supply - Regulator Adjustment

The regulated B+ control has been pre-set in the factory and needs no adjustment. However, if any repairs are made on the power supply section, the following readjustment procedures are recommended.

- 1 Allow the monitor to warm-up for about 15 minutes.
- 2 Apply the VGA (31.468KHz) signal to the monitor.
- 3 Connect a DC meter to D809 cathode end (on the main PCB), and adjust VR811 for 18.6+/- 0.1V DC.
- 4 If a fuse is broken during adjustment, remember to replace it with the exact same type of fuse.

Alignment Procedures

A Synchronization Adjustment

Input signal:

- 1 Short pin 1 and 2 of P002 to override the power saving function with a jumper switch.
- 2 Connect the probe to D410 anode and adjust VR408 to obtain the horizontal frequency to 30.6 KHz +/- 100 Hz.
- 3 Remove the jumper switch on P002, pin 1 and 2.

B Picture Size Adjustment

Input Signal: Cross Hatch Pattern

Set horizontal width at 247mm on 640x480 mode / 60Hz by adjusting VR450.

TAXAN *Ergovision 410LR Service Manual*

Set Vertical size at 185mm on 640x480 / 60Hz mode by adjusting VR325.

C Vertical Linearity Adjustment (VR311)

Input Signal: 640x480/60Hz, crosshatch pattern

Adjust VR311 for same height on the top and bottom blocks.

D Screen And White Balance Adjustment

Input Signal: Cross Hatch Pattern

Adjust VR352 so that the pincushion distortion is minimum

Drive VRs: VR502, VR532, VR562

Bias VRs: VR910, VR940, VR970

Input Signal: Full White Pattern

1a Set Brightness & Contrast to maximum and G2 voltage to have luminance 1FL.

1b First, adjust VR940 to its center position

Second, adjust VR970 so that $Y=0.311$

Then, adjust VR910 so that $X=0.281$

1c Adjust G2 voltage to have luminance to 0.5FL

Input signal: 50mm x 50mm white block pattern

2a Set Brightness at center click position & Contrast to maximum

2b Adjust VR532 for luminance to 53FL

TAXAN Ergovision 410LR Service Manual

- 3a Adjust contrast to 8FL
- 3b First adjust VR562 so that $Y=0.311$
Then adjust VR502 so that $X=0.281$
- 4a Repeat steps 2b to 3b until the best white balance is obtained

E Focus Adjustment

Input signal: Character "e" pattern

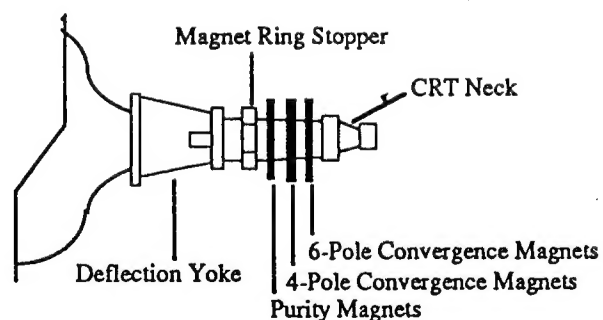
- 1 Set Brightness & Contrast for a normal display.
- 2 Adjust the focus control at the high voltage resistor block to obtain the best focus over the entire display area.

F Static Convergence Adjustment

Note The monitor should be operated for at least 30 minutes before any convergence adjustments are made.

Input Signal: Cross Hatch Pattern

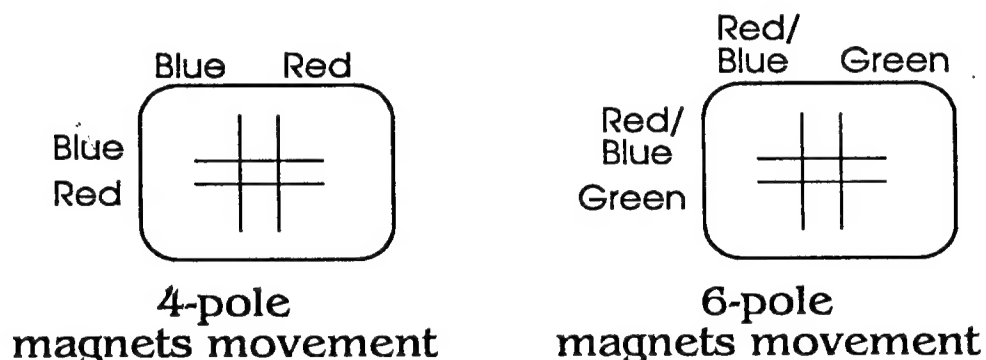
- 1 Set Brightness & Contrast so that a well-defined pattern is obtained.
- 2 Ensure that the convergence magnets on the CRT are in the correct position.



TAXAN Ergovision 410LR Service Manual

- 3 Turn the 2 tab of the 4-pole magnets independently to adjust their angles. Align the red & blue vertical lines at the center of the screen.
- 4 Turn the 2 tabs of the 4-pole magnets simultaneously to keep their angles constant. Align the red & blue horizontal lines at the center of the screen.
- 5 Turn the 2 tabs of the 6-pole magnets independently to superimpose the red or blue vertical line on the green one.
- 6 Turn the 2 tabs of the 6-pole magnets simultaneously to superimpose the red or blue horizontal line on the green one.
- 7 Repeat steps 3, 4, 5 & 6 until the best convergence is obtained.

Note The 4-pole magnets & the 6-pole magnets interact, making dot movements complex.



G Degaussing

Degaussing is required when poor color purity appears on the screen. This monitor uses an automatic degaussing circuit that is activated at power on. Automatic degaussing will be fully functional within 15 minutes.

The degaussing effect is confined to the picture tube since the coils are mounted at the back of the tube. Should any part of the chassis or cabinet becoming magnetized, it will be necessary to degauss the affected area with a manual degaussing coil.